FEEDSTUFFS

The Weekly Newspaper for the Feed Industry

Volume 32—Number 45 NOVEMBER 5, 1960 1 Year $5, 2 Years $8

More Pigs, Broilers, Turkeys, Flock Replacements, Cattle—

Survey Unit Predicts Greater Feed Consumption

CHICAGO—The Feed Survey Committee of the American Feed Manufacturers Assn. concluded here this week that total feed consumption in the year ahead will again exceed year-earlier levels, protein supplies will be adequate and grain supplies will exceed feeding requirements by a wide margin.

The committee of 24 agricultural college and experiment station specialists says the 1961 spring pig crop will be 10% larger than the 1960 spring crop. Increases are predicted in beef cattle, laying flock replacement, turkey and broiler numbers. Layer numbers may be down some, but little change is expected in dairy, sheep and lamb counts.

At the rates of feeding expected for 1960-61, livestock and poultry will consume 131 million tons of feed, of which 115 million tons will be grains and millfeeds and 16 million tons will be high-protein feeds.

Here's the Feed Survey Committee's analysis of the livestock and poultry production situation for the 1960-61 feeding year:

Fewer layers . . . more replacements . . . more broilers . . . more turkeys—The average number of layers for the feed year beginning Oct. 1, 1960, will be approximately 285 million, which is a 4% decrease from the previous year. This decline is expected, says the committee, due to the small number of replacement pullets raised during 1960.

(Turn to PREDICTIONS, page 97)

Stable Feed Prices Seen

BUFFALO, N.Y.—Stable prices in the feed and grain industries during the new feeding year were predicted at the Cornell Nutrition Conference by Dr. L. C. Cunningham, economist at the New York State College of Agriculture at Cornell University.

He said that during 1960-61 the price of corn is expected to rule about 5-6¢ lower and perhaps show even less seasonal change than last year.

(Turn to PRICES, page 100)

Research Findings Said to Illustrate Some of Reasons for Ag Revolution

By GEORGE L. GATES
Editor of Feedstuffs

BUFFALO—The findings of scientists presented at the Cornell Nutrition Conference illustrate some of the reasons for the great revolution that has taken place in agricultural production.

This description of the conference, held at Hotel Statler Nov. 2-4, was provided by Dr. W. W. Cravens, Mc-Millen Feed Mills, Ft. Wayne, Ind., who represented the American Feed Manufacturers Assn. on the program as chairman of the AFMA Nutrition Council.

"Some of the reports of this conference concern studies that are breaking new ground," he said. "This is good, for it provides us with a storehouse of knowledge, or as I sometimes think of it, as a 'bank' from which we can make withdrawals in times of stress."

Dr. C. E. Palm, dean of the Cornell College of Agriculture, who welcomed some 600 "students" to the conference, stressed the inter-dependence of industry, land-grant colleges and governmental agencies in the areas of education, research and extension.

Agriculture and the industries asso-

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Lack of Inspection Uniformity Shown; Situation Improving

By ROGER BERGLUND
Feedstuffs Managing Editor

AUBURN, ALA. — Evidence that government inspection of poultry between and within plants has not been uniform is found in a preliminary report on an inspection study made by the Auburn University poultry department. However, it is noted, the trend now seems to be more in the direction of uniformity.

Condemned birds were picked up at random from plants and returned to Auburn for study. Checking the birds according to present inspection regulations, the scientists found that their agreement with the inspectors over

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More Evidence Says Rejection Rumors Wrong

By JOHN CIPPERLY
Feedstuffs Washington Correspondent

WASHINGTON — Evidence available from official sources of the U.S. Department of Agriculture indicates again that reports of heavy rejections of turkey flocks in government inspection lines are mostly incorrect.

After last week's report on this condition (Feedstuffs, Oct. 29), USDA officials reiterated their earlier position. They say rumored estimations of turkey condemnations running as high as 60% in some flocks are in error.

Because both the rumors and the resulting opinions from USDA have gained wide currency, it is necessary to turn to official reports of turkey rejections in poultry inspection plants. These reports show an insignificant number of flocks presented for slaughter inspection have been tagged with high rates of rejection.

USDA's poultry inspection service further reports that, as of this week, out of more than 100 flocks of turkeys totaling 158,000 birds, only .06% of the total was rejected because of airsac disease.

Thirteen lots showed that no more

(Turn to REJECTIONS, page 97)

James H. Murphy of Murphy Products Dies

BURLINGTON, WIS. — James H. Murphy, 71, chairman of the board and chief executive officer of Murphy Products Co., died Oct. 27 at Memorial Hospital of a coronary.

J. H. Murphy

Mr. Murphy, a pioneer concentrate livestock feed manufacturer, was born April 2, 1889, on a Kewanee County, Wisconsin, dairy farm. He graduated from Kewanee High School and was principal of a Kewanee County Graded School for three years.

Mr. Murphy entered the University

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Bank Proposes Wider Credit-Cash Margin As Poultry Control

DURHAM, N.H. — A margin between cash and credit feed prices wide enough to encourage poultrymen to seek credit from institutional sources is the heart of a poultry industry control proposal quoted in a recent bulletin of the University of New Hampshire.

The proposal, first suggested in an article in New England Farm Finance News, issued by the Federal Reserve

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'Prosperity Ticket' Is Illinois Theme

By DON E. ROGERS
Feedstuffs Staff

SPRINGFIELD, ILL. — "Vote the Prosperity Ticket" was the theme of the joint convention of the Illinois Feed Assn. and the Illinois Poultry & Hatchery Federation Nov. 2-3. The campaign issues were prosperity ver-

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FEEDSTUFFS *Features This Week*

EXTENDED AREA—A new mill and bulk station greatly expanded trade area served by a Missouri firm. **Page 26.**

DIRECT MAIL—Ideas on how to promote feed sales through direct mail advertising are presented on **page 38.**

CHEMICALS—The relationship of the animal production business and the chemical industry is told on **page 46.**

PROTEIN BLOCKS—Installation of protein block equipment in a Texas feed mill is described on **page 54.**

SELLING—A feed man tells why he thinks his office is the best place to sell. **Page 66.**

MARKETING—The importance of marketing in an integrated egg operation is related on **page 76.**

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Arkansas Study Indicates—

Some 'Fines' Benefit Pelleted Broiler Ration

By J. CLAYTON HERMAN
University of Arkansas

FAYETTEVILLE, ARK. — "Presence of 'fines' in a pelleted ration for broilers is beneficial rather than deleterious," D. B. Bragg, research assistant, reported here during the fourth annual Poultry Study Day at the University of Arkansas' Agricultural Experiment Station.

Speaking to more than 75 poultrymen, researchers and agricultural leaders attending, he explained that three feeding trials of eight weeks duration were conducted to determine if it is necessary to feed broilers a pelleted diet composed of all pel-

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FEEDSTUFFS®

The Weekly Newspaper for the Feed Industry

Published by THE MILLER PUBLISHING CO.

2501 Wayzata Blvd., Minneapolis, Minn.

Address Mail to: Box 67, Minneapolis 40, Minn.

Telephone FRanklin 4-5200 - All Offices Serviced by Bell System Teletype

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Correspondence regarding subscriptions, changes of address, etc., should be sent to Circulation Manager, Feedstuffs, Box 67, Minneapolis 40, Minn. Single copies 50¢. Subscription rates: One year $5, two years $8, in the U.S., U.S. possessions, Canada and Pan-America. Add $2 a year for postage to other countries. Readers are urged to give prompt notice of change of address and to anticipate future changes by at least three weeks' advance notice. Ask postman for form 22-S. Feedstuffs accepts subscriptions only through its own offices; no subscription solicitors are employed or recognized. Associated publications: The Northwestern Miller, The American Baker, Milling Production, Croplife, Farm Store Merchandising, Feedlot and Professional Nursing Home. Second-class postage paid at Minneapolis, Minn.

ABC Audited Paid Circulation — NCP

The regional circulation of this issue is concentrated in the northwestern states

Top of the Hopper

MANY COLLEGE AND EXTENSION people in broiler areas have joined industry men in seeking more information on causes of and solutions to the condemnation problem. In this connection, some recent Alabama research brings out data on a point about which many have complained—lack of uniformity in and between plants in inspections. A check by experts of hundreds of birds which were rejected showed that agreement between these experts and the government experts was not very high. The situation has improved in recent months, however, the study indicates, and agreement on birds which should be condemned has increased considerably.

MORE PEOPLE ARE SAYING that the amount of feed made and delivered on a prescription basis will continue to increase significantly, in line with predictions made some time ago by some veterinarians and others. It has been mentioned that, partly because of regulatory problems, prescriptions are made for drug-containing feeds which are felt necessary for herd or flock health and productivity but which otherwise would not be made and used. At the same time, there have been warnings that this practice must not be used as a "subterfuge." But beyond this, there still is the prediction that as livestock and poultry production and disease problems become more complex, it will be likely in many instances that still more feed will be mixed on a prescription basis.

AN INDUSTRY OBSERVER suggests that larger feed manufacturers and their dealer-mixers consider use of something between the conventional protein supplement (containing soybean meal) and the super concentrate (without soy) or premix. Some, but not all, of the soy then would be added at the local mill. This man's idea is that elimination of some of the soy from this type of concentrate would lower costs at the local mixer level, but it still would leave certain problems and responsibility for FDA compliance with the supplement-manufacturing larger firms, which this observer feels are better able and equipped to handle such aspects of the feed business. He speculates that such a system can effect a satisfactory compromise between various distribution and regulatory problems for feed manufacturers and their mixer-customers.

IN SOME SECTIONS, there seems to be a feeling that the feed business area between two different types of operations will continue to narrow, that there will be little or no "in between" eventually. On the one hand there would be mills which would sell feed on low margins to large volume users who handle their production and marketing operations independent of feed company control of any kind. On the other hand, there would be those who go all the way into their own or closely controlled or directed production and marketing of the end product. There would be less of the conventional financing and risk taking without control or access to profits from that risk. There would be less of the more conventional distribution patterns. It would be a case of being either a low-cost, large volume strictly feed operation, or an operation which gets more deeply into production and marketing of the end products.

AN EXPERT IN VETERINARY MEDICINE and pharmacology, commenting on the Delaney clause, points out that just because large doses of a substance cause one effect, it does not mean that lower doses will do the

(Turn to TOP OF THE HOPPER, page 101)

How's Business?

AN EVERY WEEK REVIEW OF FORMULA FEED BUSINESS VOLUME, INCLUDING PRICE, SUPPLY AND DEMAND TRENDS

While formula feed sales remain somewhat below expectations in some areas, business is generally good, and there are indications that the heavy feeding season will be in full swing within a couple weeks, at least. The hog-corn ratio, based on Chicago prices, edged up to 16.6 this week compared with 15.8 the week before and 12.0 a year ago. The wholesale feedstuff price index was 72.7 this week—down from 73.2 the previous week and 79.8 the comparable week last year. The feed-grain index declined, finishing at 59.4 this week compared with 60.3 last week and 62.9 a year earlier. (Feed markets in detail on pages 98-100.)

Northwest

The pick-up in formula feed business that's been expected for several weeks now appears to be arriving. A few manufacturers report they are still in the doldrums, but more of them say sales are definitely on the increase.

A highly encouraging note is the sharp boost in the sale of hog feeds, indicating that this line will probably provide some volume during the coming months. Several manufacturers also reported that movement of cattle feed has been picking up faster than expected, which is evidence that feeder cattle are moving into the lots in sizable numbers.

The expected improvement in demand for dairy feed—delayed several weeks by nice weather and lingering pasture feed—also has shown itself the past few days.

Sales prospects for the next few weeks look good. There is still some harvesting activity in the area, and the weather continues to be mild and open. Both of these factors tend to retard feed movement, and both are bound to change soon.

Soybean oil meal prices dipped again. Supplies are more than plentiful, and the current price is generally considered rock-bottom. Heavy supplies also depressed animal protein prices. Alfalfa meal remained unchanged but on a very firm market. Middlings showed a price decrease, but bran seemed to be in shorter supply, and the price held firm.

Southwest

The urgent pace of formula feed business in the Southwest has slackened somewhat this week. Mixers are reporting good five and six day runs, although in some instances they have cut back to a one shift operation. Some plants have a backlog of directions on cattle feed orders ranging up to five to six days, but in most instances backlogs are smaller.

Hog feed business is picking up with some sources reporting good sales of hog supplements. Favorable feeding ratios again played an important role in both hog feeds and cattle feeds. It was reported that prices being paid by the farmer for commercial feeds were at the lowest level in almost three years. These facts breed nothing but optimism.

Egg feed sales continue good and it is felt that this line will show further improvement due to the recent improvement in hatchery production.

Northeast

The improved tone in the formula feed market continued as sales held slightly higher than mid-October levels for the third week in a row.

Egg mashes continued in good demand despite some easiness in the egg market. Dairy feeds were well taken, with the accent on concentrates. Growing feeds gave a good account of themselves, but broiler and pig feeds just tagged along.

Broiler prices, with a rise of ¼-½¢ lb. in the East, were practically unchanged. Eggs gave ground, with weakness centering in the medium sizes.

The ingredient market was a little easier during the week. Corn was about steady, despite bad weather. Oats also were about steady. Barley was off 1¢ and feed wheat was unchanged. Animal tallow turned around and gained ⅛¢ lb. Interest in molasses is increasing as consumers look ahead for their supplies. Soybean oil meal (44% and 50%) declined $2. Efforts were made to strengthen linseed oil, and the price moved up $1, but the higher quote may not hold because of the weakness of soybeans. Gluten meal held steady.

Running time of formula feed manufacturers averaged 36 hours last week, with some cooperatives up to 40 hours or more.

Central States

Although it is a little difficult to put a finger on the exact spots where improvement in the demand for formula feeds over the preceding mid-week is present, still it seems to be there to some degree.

This improvement has not been in the volume that all had hoped for, but at least, it is a step in the right direction. It has not been enough to have resulted in stepping up the running time to any material extent for the area as a whole, but there has been some modest improvement in this respect.

Demand for cattle feed has been a little on the slow side for some time, and if there is to be any change it will have to be in the nature of a broadening-out. Call for hog feeds did appear to be slightly better than very recently, althought the hog market at Chicago has dropped about $1 from recent highs. Egg feeds have been creeping up, and as a matter of fact, in some quarters they have been somewhat of a bright spot. Call for turkey feeds is showing its seasonal tapering-off that always manifests itself as the holidays approach.

South Central

A fairly active demand continues for formula feeds this week. Mill representatives say their sales volume is about equal to or possibly a shade better than the preceding week and in line with that of a year ago. Plant production time generally is five days, but several mills are working a few hours overtime.

While manufacturers are not expecting any big upward surge in sales to take place, they do look upon prospects as promising. They think formula feeds are priced quite low when compared to the returns from livestock and poultry products, and they don't look for any quick reversal of this favorable condition.

The only change in the feed demand pattern is that turkey feeds have dropped out of the picture. While not a big item in this area, the loss of the tonnage is always noticed. Hog

(Turn to MARKETS, page 103)

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PUSH BUTTON OPERATION—This farm includes a push-button feed mixing plant valued at $50,000. Ingredient bins may be seen towering over the farm buildings. This farm has built up big volume, but has maintained diversity. It includes a beef feeding program, turkey hatching and feeding programs and a large dairy operation, plus other sideline interests. Owners of this farm have been formulating and making their own feed for over 18 years.

On-Farm Mixing Survey—Part 3

Farmers Discuss Feed Mixing; Feed Industry Seems Confident

By JIM RUTTER
Feedstuffs Staff

Most of the feed men in a midwestern area covered in a survey of farm mixing developments appear confident that they can continue to maintain their role in animal agriculture. Many of them indicated that farm mixing has not affected their operations very greatly. At the same time, some of them feel that this is no time for complacency about the problem.

While farm mixing may not have gone very far in the area covered in this survey, there are instances of larger producers who have got into farm mixing and say they will continue. A few of these are mentioned in this report.

Many of the reasons given by feed manufacturers explaining why they feel complete farm mixing won't become a big success have been listed in earlier articles of this series. Some of these include the farmer's need for reliable service, assurance of feed quality, extension of credit, conveniences of a commercial feed and little or no reduction in actual feed costs.

In addition to local custom milling, some farmers, of course, have been mixing commercial concentrate with their home-produced grains, and some feed men expect this to continue or grow.

FEED MIXER—Russell Jeckel, Delavan, Ill., is a farmer-hog producer who also classifies as a manufacturer. Mr. Jeckel started mixing his own feed 2½ years ago for his hog operation. Now, he has developed a feed business sideline by selling his own brand of premixes.

EDITOR'S NOTE: *This is the third and final article in a series appearing in Feedstuffs on farm mixing of feeds. Information for the articles was accumulated through visits with feed manufacturers of all sizes and types in four midwestern states (Illinois, Iowa, Minnesota and Wisconsin). In this article, farmers practicing farm mixing "from the ground up" report results with the system and why they favor it. In turn, some commercial feed manufacturers counter with their arguments of why most farmers won't want to try making their own premixes and making feed from the ground up. Other views of feed men were presented in preceding articles.*

"Many farmers can handle this mixing function all right," one feed man said. "But only a few will ever be very interested in making feed from scratch. The margin of profit, when all costs are considered, is just too low."

"The preparation of the premix is the first important step on the road to a successful feeding program," says one agricultural college researcher. "Farmers can mix a concentrate with a grain easily, but it is doubtful if many of them will be inclined to try measuring and mixing the minor and micro-ingredients found in a premix."

"Mixing devices on the market will perform with complete satisfaction on the farm if they are used to mix a concentrate and grain," says one feed manufacturer. "But the point is this: You have to put the right stuff through these mixing devices before it pays off in the feedlot. Few farmers can match the feed manufacturer in the preparation of a super-concentrate or premix—and even if they could, it would be only a small reduction in feed cost.

"We've pointed out before," he continues, "that too many farmers aren't considering total costs when they look at farm mixing. Too often the salesmen peddling equipment and ingredients forget to mention interest on investment, depreciation, repairs and other similar costs that must accompany a farm mixing venture."

Need Reliable Labor

Another feed man says that it isn't easy to get reliable help to handle the mixing of feed on farms. "In many cases, farm laborers just won't be precise enough to do the job right."

(This point ties in with the opinion held by one feed manufacturer regarding the sale of complete feeds—"If the number of owner-operator farms continues to decline, we will probably notice an even more distinct break between cash grain and livestock operations. Absentee owners generally favor cash grain farming for it is less speculative than livestock farming.

("With this condition — absentee owners and cash grain farming—the sale of complete feed is likely to move back into the feeding picture.")

Some firms seem confident at this time that they can hold their own in the production and sale of super-concentrates and premixes if they are to handle this type of product. There does seem to be a group of "innovator" farmers who will challenge this point, however.

Typical of this larger operator farm is Russell Jeckel, farmer in Delavan, Ill. Mr. Jeckel is a college graduate in agriculture, with some training in nutrition.

He doesn't have a lot of land to work—200 tillable acres—but he raises about 2,500 head of hogs each year. He has been making his own feed, from basic ingredients, for about 2½ years now.

Feed Costs Drop

"Here is what I've accomplished during this time," says Mr. Jeckel. "My records show that feed costs have dropped over $1.50 per 100 lb. of pork.

"Before we started mixing our own feed, it was costing us $11 to produce 100 lb. of pork. Now, our cost has dropped to $9.46. In these records, the price of grain has been standardized at one figure so our lower cost of production can be attributed to a saving in cost of supplement.

"In other words, we figure we're saving at least $2.50 a hog by using this farm-mixing system. This is the difference between success and failure in the hog business. Anyone can make money on hogs in a good year, but this doesn't mean a thing if you can't at least break even during the bad years."

Mr. Jeckel likes to buy basic ingredients directly from the point of processing. "I haven't gotten any poor batches of soybean meal," he says. "I make the assumption that my supplier can't afford to give me a bad load.

"This points up the fact that I don't have the quality control advantages available to commercial feed manufacturers. But I can recognize the value of the ration by the performance of my hogs. We know exactly what is in the feed, and can vary the fortification in accordance with the

(Turn to FARM MIXING, page 8)

FARM ELEVATOR — This elevator, located on a farm in Illinois, provides storage facilities for a feed mixing operation. Owner Russell Jeckel mixes his own feed "from the ground up." Soybean meal goes into one bin, the remainder are used for grain storage (25,000 bu. capacity). Mr. Jeckel mixes about 1,400 tons of feed each year for his hog operation.

Delmarva Poultry Situation Favorable

SALISBURY, MD. — Delmarva poultrymen have just come through a month in which they enjoyed quite favorable conditions.

Prices during October averaged 16.5¢. Instead of the usual seasonal slump as the holidays approach, October's price averaged the same as September. The October price for 1959 was 15.5¢, a cent below last month's average. Broiler mash prices averaged $4.40 cwt. Not during 1960 or 1959 has the price been so low for feed.

Baby chick prices dropped from $13.50 in September to $13 per hundred last month. This was the only major cost in poultry production which was above last year's price. A year ago chicks sold for $10 per hundred.

Last week farmers received an average of 16.54¢ per pound for their birds. The week before the price was only a shade better, 16.56¢. However, last week's price was nearly a cent better than a year ago.

Hatcherymen in 22 reporting states set 42,725,000 eggs last week. This was 1% above the previous week and 13% above the corresponding week a year ago. Settings were up from the previous week in 14 of the 22 reporting states. States for which sizeable increases were reported include North Carolina, California, Indiana and Arkansas.

Placements in the 22 states totaled 28,068,000 broiler chicks. This was 1% above the previous week and 9% above the corresponding week a year ago. Increases were reported for 14 states compared with the previous week. States showing appreciable increases include California, Delaware and Alabama.

Egg, Broiler Prices Stable; Turkey Market Shows Holiday Boost

NEW YORK — Even though a mixed price pattern in the nation's egg market prevailed during the week ended Nov. 2, price levels averaged 15-20¢ higher than a year earlier.

Broiler prices generally leveled off at the close of the reporting period. During the first half of the week, broiler markets were unsettled and showed declines of ½-1¢.

Turkey trading continued to gain impetus as large chain and independent food stores built inventories for pre-Thanksgiving sales.

In Iowa, the farm price on grade A, large eggs climbed 1-2¢ to 41-48¢. Mediums showed a decline of 1-4¢, but smalls held steady. The Chicago market showed much the same price trend.

Broiler Prices Down

Delmarva broiler prices averaged about ¼¢ lower than a week earlier. The closing price was 16½-16¾¢.

Southern markets lowered broiler and fryer prices, too. The drop was ¾-1¢ to 14-15¢ in Georgia, and ½-1¢ to 14½-15½¢ in Arkansas.

Colorado to Expand Public Relations Funds

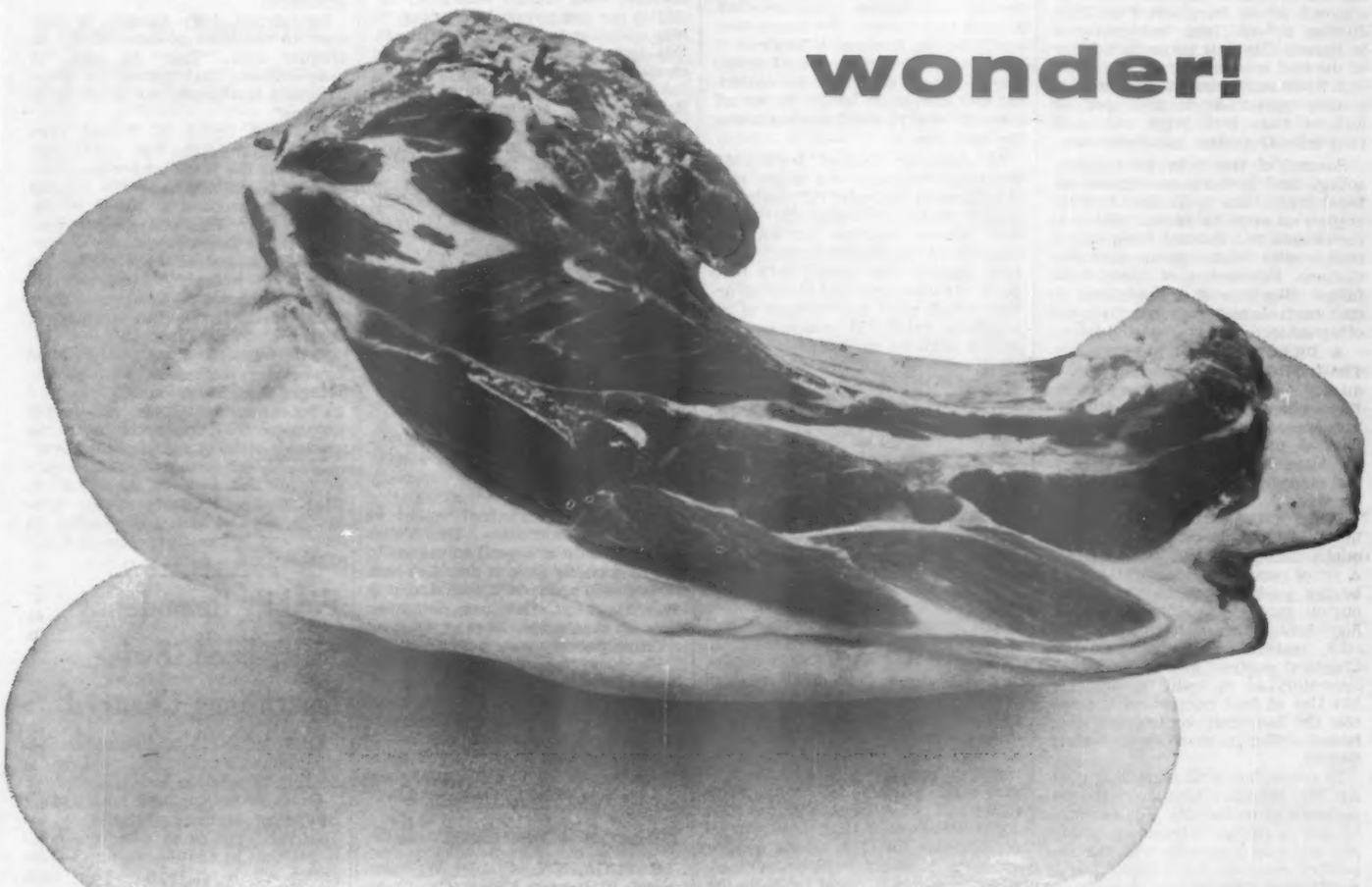
DENVER, COLO. — The board of directors of the Colorado Grain, Milling & Feed Dealers Assn. has voted to revamp the association's dues structure to provide more funds for its expanding public and community relations programs.

Also discussed by the board were plans for the annual state convention to be held at Denver's Hilton Hotel Feb. 19-21, and for the Grain & Feed Dealers National Assn. convention scheduled at the Hilton in March of 1962.

The board voted to give feed dealer members a bigger share of the three-day state convention program than in the past.

This strong message, telling your feed customers the importance of using your well-balanced formula feeds in raising meat-type hogs, appeared recently in *National Hog Farmer* and *Better Farming Methods*. It will also appear in *Successful Farming*, and the message will be carried on radio stations WGN, WCCO and WHO, to help build acceptance for your swine feeds containing PRO-STREP.

A meatless wonder ...and no wonder!



This section could have been cut from a meat-type hog! Even well-bred hogs, with a potential for a high percentage of lean primal cuts, will wind up on the fat side if they are overfed on corn. It takes careful feeding as well as careful breeding to produce the lean pork cuts that consumers want and for which packers are willing to pay a premium.

Meat-Type Feeding For Meat-Type Breeding

The meat-type hog, competing harder than ever for its share of the protein market, is bred to utilize high-energy, well-balanced rations. And balanced, complete-formula rations or supplements—mixed by men with know-how and the proper equipment—can help turn your hogs into more profitable feed converters.

Ask your local supplier for a feeding program that will fit conditions on your farm. If necessary, he can help you fortify home-grown grains with carefully balanced supplements. Be sure to ask him about the advantages of adding PRO-STREP to your swine rations from start to finish to help prevent scours (bacterial swine enteritis) and produce faster, more uniform gains . . . at a lower unit cost.

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Southeast Production School Highlights Importance of Quality Control, Compliance

By ROGER BERGLUND
Feedstuffs Managing Editor

ATHENS, GA.—The importance which feed men are attaching to quality control, compliance with FDA regulations and avoiding contamination was reflected in several of the talks presented at the first Southeastern Feed Production School.

More than 80 persons representing feed concerns from over the Southeast were on hand for the school to take a hard look at ways to improve their operations and their products.

The school was held in a classroom-like atmosphere in the ultra-modern facilities of the Center for Continuing Education at the University of Georgia. It was sponsored jointly by the Southeastern Poultry & Egg Assn., Feed Production School, Inc., and the university. This was the first regional school in which Feed Production School, Inc., headquartered in Kansas City, has taken part. Many of the feed men present for the event Oct. 23-25 were from integrated feed-poultry operations in the area, as well as from both large and small feed manufacturing establishments.

Several of the talks by industry, college and government experts offered suggestions to the feed mill operators on steps to control quality in ingredients and finished feeds and to comply with federal government regulations. Summaries of these talks follow. (Reviews of presentations on cost control, materials handling and other subjects will be reported later.)

A PRACTICAL QUALITY CONTROL PROGRAM—Suggestions on a quality control program covering three phases of feed manufacture—raw ingredients, manufacturing and finished products—were spelled out by Allan W. Wietlake, quality control manager for Hales & Hunter Co., Chicago.

When it comes to quality control in ingredients, he indicated, a mill might use such things as these: (1) A set of purchasing specifications and buying guides, such as the AFMA buying guides. (2) Check incoming ingredients for uniformity, color, odor, texture and temperature. (3) Chemical analysis in own or outside laboratory as an audit on suppliers. (4) Use of feed microscopy if possible. (5) Inventory control and good housekeeping to maintain ingredient quality.

In connection with ingredient quality, Mr. Wietlake mentioned the importance of uniformity. For example, he said, a change in meat scrap supply, going to a supplier who includes poultry meal in his product, could result in a drop in phosphorus content which would throw off formulation results.

Mr. Wietlake also outlined control measures in manufacturing, emphasizing that the most important element is training men to recognize their responsibility to help maintain quality as well as efficiency. In manufacturing, control centers primarily around proportioning and mixing and avoiding contamination.

A periodic routine check on mixing equipment can be made by using a tracer such as 3-nitro and analyzing chemically for it. A standard mixing test should be adopted so that a basis for comparison can be made from one test to the next. Tests can be performed with these tracers on batch mixers to determine optimum mixing time and maximum concentrations of premixes which can be safely added.

Use of a tracer such as 3-nitro, Mr. Wietlake said, also is a good way to check on contamination in conveying and handling. A feed containing the tracer at a specific level can be run through the system being checked. A plain feed without the tracer then would follow. A chemical analysis of samples for the tracer would reveal what degree of contamination is present and how much has to be set off between runs to avoid contaminating the next run.

In checking finished feeds, Mr. Wietlake explained, one might use: (1) Chemical analysis; (2) statistical quality control methods; (3) inventory control records to compare amounts of ingredients actually used with amounts that should have been used; (4) electronic and chemical devices which print out amounts of ingredients used; (5) comparison of pounds produced against pounds packaged or loaded out in bulk; (6) inventory records in batch mills for recording amounts of critical ingredients or premixes which are weighed and manually added to the mixer; a running inventory record can be kept on these ingredients. (This is valuable for drug control and FDA compliance, too.)

In response to a question, Mr. Wietlake suggested as an example of a mixing test the following: A two-ton batch containing 3-nitro would be run for four minutes. Ten samples would be obtained at the mixer discharge and analyzed for 3-nitro. If there were less than 8% variation among analyses, one might consider that the mix is satisfactory. Drug manufacturers, it was noted, will check samples for feed mills.

Asked what generally is the minimum amount of an additive or premix which can be added to a ribbon mixer and still get a satisfactory mix, Mr. Wietlake said that there will be considerable variation among mixers. In some, it might be 2 oz. per ton, while in others it might be 20 lb. per ton.

QUALITY CONTROL IN SMALL MILLS—An outline for a quality control program in small feed mills was presented by Dr. Henry L. Fuller of the University of Georgia poultry department.

For example, he told how a mill operator with limited laboratory facilities can use physical inspection to help maintain quality. On ingredients, this includes frequent sampling and checking against acceptable standards for physical characteristics, plus grading (primarily applicable to grain). On feed, it includes inspection of feed during process of mixing and frequent sampling of finished feed and checking against other samples of same batch and previous batches for physical characteristics and uniformity.

Inventory control, when used with occasional chemical analyses, can be very effective. It was noted that premixes must be sufficiently dilute so that omissions or overages will be detectable by inventory check. However, it must be recognized that two "wrongs" don't make a "right" (overages and shortages cancel each other), Dr. Fuller cautioned.

Also suggested was use of analytical services offered by firms supplying premixes and drugs, especially for a test of microingredient blending and also for guaranteed values as well as contamination. Dr. Fuller said riboflavin is a good substance to use as a check since it does not hurt to have too much in a feed and it is easy to check. One can determine through checks how large or small an additive package may be.

He suggested use of commercial laboratories to check on both ingredient quality and mixed feeds. Local mills, he said, have found it pays to have ingredient samples tested, with copies of reports to suppliers. Testing of occasional samples of mixed feed

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FARM MIXING DISCUSSED

LEXINGTON, KY. — A development of concern to feed men in some areas—on-farm mixing of feed by livestock producers — received some attention at the National Swine Industry Conference.

One of the speakers, George Brauer, a swine producer at Oakford, Ill., said that he belongs to a cooperative ingredient buying group. There are nine cooperative buying groups in Illinois now and several in other states, according to Mr. Brauer. (A summary of his remarks is part of a report on the conference which starts on page 10.)

One of the recommendations which came from a nutrition and feeding workshop at the conference was that there be "further studies on the economics and costs of on-farm mixing of feeds."

Beacon President Ill

CAYUGA, N.Y.—Stanley W. Tyler, president, Beacon Milling Co., Cayuga, is recovering from a heart ailment in Auburn (N.Y.) Memorial Hospital, it was reported this week. Friends said he was "making good progress."

PRODUCTION SCHOOL—Some of the program participants and feed men at the Southeastern Feed Production School in Athens, Ga., are pictured here. In the first photo, left to right, are W. C. Rudolph, Alabama Feed Mill, Tuscaloosa; William J. Brown, Spartan Grain & Mill Co., Spartanburg, S.C., and Art Stegner, Butler Mfg. Co., Kansas City, a speaker. In the second picture are four feed men present for the school—Glen Morris, Rocco Feeds, Harrisonburg, Va.; Ed Turner, Rocco Feeds, Moorefield, W.Va.; Richard Johnston, J. H. Johnston Co., Woodstock, Ga., and George Walsh, Purnell's, Inc., Tupelo, Miss. In the third photo are three of the men on the program—Ted Stivers, T. Stivers Co., Decatur, Ga.; J. W. Sloan, Cosby-Hodges Milling Co., Birmingham, Ala., and Allan W. Wietlake, Hales & Hunter Co., Chicago.

G.L.F. Official Sees More Farm Efficiency; Sales Off, Profits Up

SYRACUSE, N.Y.—More efficiency on the farm and more control over the marketing of their farm products are the important needs of farmers in the sixties, according to one farm leader, Edmund H. Fallon, general manager of Cooperative G.L.F. Exchange, told G.L.F. members at their 40th annual meeting that national and worldwide changes "mean just one thing. Farmers must continue to improve their efficiency if they are going to remain competitive.

"Farmers will have to become market oriented—to supply what the retailer and consumer want," he added. "They will have to build strong, efficient organizations to deal with strong, experienced retail buyers."

A long-range G.L.F. objective is to help farmers get more for their crops, by bringing about farmer participation in all the steps between the farm and the consumer, Mr. Fallon announced.

He advised dairy farmers to feed cows to the limit of their ability to produce milk. "This," he said, "is more efficient than getting the same increased production out of additional cows."

He cited Dr. J. K. Loosli, Cornell University, who has stated that nearly all the black and white cows in the Northeast have the genetic ability to produce 10,000-12,000 lb. milk a year. The average cow produces 7,800 lb.

G.L.F. supported the contention with a research project in which 442 cows given more feed increased their milk production by an average of 2,031 lb. of milk annually.

"The extra feed can be supplied by heavier feeding of high quality forage," Mr. Fallon stated, "as well as by commercial feeds, and forage grown by the farmer himself is the cheapest form of feed for his cows."

Mr. Fallon mentioned G.L.F. support for this idea, in the G.L.F. 5-Star Forage Program, which "promotes all the practices leading to more and better forage production."

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Foxbilt Remodeling Mill; Feed, Swine Operations Changed

DES MOINES—Extensive remodeling of the Foxbilt, Inc., feed mill is nearing completion here.

Grain processing and handling equipment is being installed to enable the plant to manufacture complete feeds in addition to the concentrates which up to now have been the only type of feed produced by the company.

Complete feeds will be marketed within a 75-mile radius of the Des Moines plant, and the company will continue to market concentrates through franchised manufacturers elsewhere in the five-state area served by the company, W. A. Rodgers, manager, said. Dealers will handle complete Foxbilt feeds within the Des Moines area.

The company's mill at Lone Rock, Wis., also is being expanded, Mr. Rodgers said.

Foxbilt was acquired last April by John Morrell & Co. in a stock exchange transaction. Along with the Golden Sun Milling Co., Estherville, Iowa, which was purchased outright at the same time, it comprises the feed division of the Morrell meat packing concern.

Equipment being installed at Des Moines includes eight Harvestore storage tanks with a total of 1,000-ton capacity; Sprout, Waldron & Co. pneumatic conveying system which

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ALABAMA CONFERENCE—Several of those taking part in the program at the Alabama Nutrition Conference at Auburn University are pictured here. Left to right, are E. B. Mediock, Albertville, president of the Alabama Feed Assn.; John Weeks, Birmingham, former president; Ray Cavender of Auburn; Arthur Winter, National Dairy Products Corp., Glenview, Ill.; Dr. K. M. Autrey and Dr. Howard Tucker of Auburn. (A report on the conference appears on page 14.)

Nutrena Tells Details Of Role in New Egg Project in Tennessee

MINNEAPOLIS — Mechanics of how Nutrena Mills, Inc., is associated with a Memphis, Tenn., wholesale grocery firm in a new southern egg producing and marketing venture were detailed this week by officials of the Minneapolis-based feed manufacturer.

Malone & Hyde, Inc., the grocery wholesaler, announced from Memphis recently (Feedstuffs, Oct. 15) that Malone & Hyde, some of its 327 associated food stores, and Nutrena and independent egg producers were cooperating in a project to market up to 70 million extra fancy fresh eggs a year.

Nucleus of the project will be M&H Farms, Inc., to be located near Oakland east of Memphis. There, 90,000 laying hens and 30,000 replacement pullets will produce 34,000 dozen eggs weekly.

A total of 300,000 layers are anticipated for the program. Additional egg production is to come from independent producers in the Memphis and Oakland areas.

M&H Farms has established a yolk-color and quality control program with definite specifications. Nutrena officials noted that in order for poultrymen to produce eggs uniform in color, size and quality, M&H will maintain one over-all system of production, including the use of feed which meets the project's standards.

"We expect the majority of producers marketing through M&H will feed Nutrena's Egg Ration A," said Nutrena spokesmen. "Producers in the program can use that ration or they are free to use a concentrate that will produce the kind of egg that the quality control system stipulates.

"There is nothing requiring producers to use Nutrena feed, but they will be required to meet the feeding specifications set down by M&H, and we believe that Nutrena's Egg Ration A will do the best job of meeting those specifications."

Through Dealer or Direct

Most of the feed used by the producers will be sold through Nutrena dealers—if there is a dealer in the area where the producer operates. "It is possible," Nutrena officials explained, "that a large producer will be supplied directly from a Nutrena plant, if such a supply arrangement is geographically dictated or if a dealer doesn't have bulk facilities."

Three major points of advantage to independent poultrymen participating in the new egg producing and marketing venture were listed by Nutrena officials. They said the M&H plan "(1) assures the producer of a market for his eggs at the best possible price in the area, (2) provides

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New Oral Method CocciVac Available

OPELIKA, ALA.—A new oral method of administering the coccidiosis vaccine CocciVac to chickens in "drops" has been made available by Dorn & Mitchell Laboratories, Inc.

"The new procedure is expected to be a substantial help to poultry growers," according to L. R. Patton, Dorn & Mitchell sales manager. "Prior to introduction, the oral 'drop' method was found to be highly effective in extensive field tests involving more than 5 million chickens. The tests yielded superior results both in broilers and replacement pullets.

"Use of the hatchery application permitted a higher level of early immunity than the drinking-water method of administering CocciVac. Of considerable importance also was the disclosure that vaccination by the 'drop' method considerably simplified use of the CocciVac-Trithiadol immunization program for growers and servicemen. Previous tests had shown Trithiadol to be an efficient adjunct to the CocciVac program."

Applicator kits with complete instruction on the new oral method may be obtained on request, with shipments of CocciVac, Mr. Patton said.

These will enable hatchery vaccinating and debeaking crews to carry out CocciVac vaccination of chicks without creating new problems in hatchery management, Mr. Patton noted. Complete information and sample applicator kits may be obtained from Dorn & Mitchell, from the animal health division of Sterwin Chemicals, Inc., New York, and from all CocciVac distributors.

Directions for use of CocciVac in drinking water will continue to be packed in all CocciVac shipments for the convenience of growers who prefer the drinking-water method of application, it was announced.

NEW METHOD — The new oral method of administering the coccidiosis vaccine CocciVac is demonstrated here.

Data on Energy Values, Amino Acids For Swine Presented at Cornell Event

BUFFALO—Information on energy values of feedstuffs for swine and on the ways in which various factors influence amino acid needs of swine was presented at the Cornell Nutrition Conference in Buffalo by Dr. D. E. Becker of the University of Illinois.

Dr. Becker presented Illinois findings on the metabolizable energy of a good number of feedstuffs for swine. Also, he discussed and presented data on amino acid requirements in relation to protein levels and to stage of development.

Research on amino acid supplementation of practical rations was outlined, and Dr. Becker said it seems certain that interest in this area of research will continue and will result eventually in low-protein rations adequately balanced in amino acid content.

Another swine report (summarized below) dealt with the effects of oral or parenteral iron administration to suckling pigs and to sows.

Dr. Becker noted that in spite of the importance of energy in the nutrition of swine, this area of research has received only meager attention for some time. There is a great need for accurate data on energy in feed commonly used for swine, but research is complicated by existence of several methods of obtaining and expressing energy values. Dr. Becker went on to discuss methods of expressing energy values and then presented findings from Illinois work to determine the metabolizable energy values of feeds for the young pig. The values are listed in Table 1.

It has become increasingly apparent, Dr. Becker continued, that protein feeding standards are merely a guide and that all protein sources will not necessarily satisfy the pig's need when fed at prescribed levels. Therefore, recent research has placed greater emphasis on amino acid requirements. The evidence suggests that needs are influenced by a variety of factors.

One of these is the protein effect. It is clear, said Dr. Becker, that amino acid needs are not the same at all levels of protein. He pointed out that there is evidence with the pig, as well as with the chick, to indicate that the required percentage of certain indispensable amino acids in the protein decreases in a fairly direct fashion as the protein level increases. It remains to be determined whether this interaction applies to all of the indispensable amino acids. Estimated amino acid needs of the weanling pig at various levels of adequate dietary protein levels are presented in Table 2.

Effect of Age

The effect of age or stage of development has received some attention with swine. With diets of similar caloric density, Dr. Becker said, it appears that stage of development has a significant effect upon isoleucine needs. Under usual conditions, the decreased isoleucine required with advancing age would be in addition to that decrease anticipated from feeding lower levels of dietary protein. On the basis that age exerts a similar effect on the need for the remaining essential amino acids, the Illinois station has estimated the essential amino acid requirements of the baby pig and the finishing pig. The values are presented in Table 3.

Dr. Becker discussed data on amino acid supplementation of practical rations, noting that lysine, methionine and tryptophan have been tested in low-protein, corn-soy rations in an effort to obtain performance equal to normal levels of protein.

He cited data indicating that lysine becomes a limiting amino acid as the protein level is reduced in corn-soy rations for the weanling pig. Tryptophan also may require consideration in low-protein rations.

Dr. Becker also said that perhaps the beneficial results of glycine in low-protein rations which have been noted indicate a glycine requirement

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TABLE 1. Metabolizable Energy of Feedstuffs for Swine

Feedstuff	Metabolizable energy Cal./gm.
Corn starch	3.61
Dextrose	3.26
Ground yellow corn	3.25
Ground wheat	3.08
Ground oats	2.68
Rolled oats	3.47
Ground milo	3.07
Wheat bran	2.18
Alfalfa meal	1.30
Corn oil	7.30
Lard	7.54
Stabilized tallow	7.83
Lactose	3.34
Dried whey	2.93
Meat and bone scrap (50%)	1.56
Menhaden fish meal	2.70
Tankage (60%)	2.07
Soybean meal (50%)	3.39

TABLE 3. The Amino Acid Needs of Swine at Various Stages of Development (Per Cent of Diet)

	Baby pig	Weanling pig	Finishing pig
Level of dietary protein, %	(10 lb.) 22	(30 lb.) 16	(100 lb.) 12
Arginine	0.37	0.25	0.15
Histidine	0.34	0.23	0.14
Isoleucine	0.76	0.52	0.31
Leucine	0.98	0.67	0.40
Lysine	1.08	0.74	0.44
Methionine*	0.73	0.50	0.30
Phenylalanine*	0.79	0.54	0.32
Threonine	0.66	0.45	0.27
Tryptophan	0.18	0.12	0.07
Valine	0.67	0.46	0.28

*Cystine can satisfy 40% of the total need for methionine and tyrosine can satisfy 30% of the total need for phenylalanine.

TABLE 2. Calculated Amino Acid Needs of the Weanling Pig at Various Protein Levels (Per Cent of the Diet)

Amino acid	Calculated need at dietary protein levels of* 12%	14%	16%	18%	20%	22%	24%
Arginine	0.21	0.23	0.25	0.28	0.29	0.30	0.31
Histidine	0.19	0.21	0.23	0.24	0.26	0.27	0.28
Isoleucine	0.42	0.48	0.52	0.57	0.58	0.61	0.63
Leucine	0.57	0.63	0.67	0.74	0.77	0.81	0.83
Lysine	0.61	0.68	0.74	0.79	0.84	0.87	0.90
Methionine**	0.40	0.45	0.50	0.53	0.56	0.58	0.60
Phenylalanine**	0.44	0.49	0.54	0.58	0.61	0.63	0.65
Threonine	0.37	0.42	0.45	0.49	0.51	0.53	0.55
Tryptophan	0.10	0.11	0.12	0.13	0.14	0.15	0.15
Valine	0.38	0.43	0.46	0.50	0.52	0.54	0.56

*Calculation is based on the assumption that the requirement for all amino acids, expressed as a percentage of protein, decreases linearly as dietary protein increases. The rate of decrease is the mean of that reported for isoleucine and lysine. The need for each amino acid, expressed as a percentage of protein, was assumed to decrease 1.75% (from its value at 0% protein) per unit of increase in per cent of protein.

**Cystine and tyrosine can satisfy 40 and 30% of the total need for methionine and phenylalanine, respectively.

Soybean Oil Meal Price Drops Again

Declines on several major feeds are shown this week in the U.S. Department of Agriculture's national average bulk price report.

Most notable is the further dip in soybean oil meal prices. A heavy crush has been sending the meal down for several weeks, but many feed men now feel it can't go much lower.

Plentiful supplies of animal protein feeds in many parts of the country have resulted in lower prices, on the average. Corn prices are also down as the abundant fall crop pours in.

Otherwise, ingredient prices are holding up to last week's levels, and some show significant increases, the result of a healthy mixed feed business.

Average Bulk Prices and Index of Weighted Prices*
(Dollars per ton)

	Nov. 1, 1960	Oct. 25, 1960	Change from previous week
OILSEED MEALS			
Prices at prin. mkts.:			
Soybean meal	56.35	58.10	—1.75
Cottonseed meal	58.65	59.05	— .40
Linseed meal	62.20	61.30	+ .90
Copra cake or meal	57.50	57.50	...
Peanut meal	53.50	53.00	+ .50
Index	74.7	76.2	—1.5
ANIMAL PROTEIN FEEDS			
Prices at prin. mkts.:			
Meat meal	46.40	46.90	— .50
Tankage	67.40	68.20	— .80
Fish meal	90.00	90.00	...
Index	62.1	62.5	— .4
GRAIN HIGH-PROTEIN FEEDS			
Prices at prin. mkts.:			
Gluten feed and meal	46.45	45.20	+1.25
Dist. dried grains	58.85	58.60	+ .25
Brewers dried grains	48.50	48.20	+ .30
Index	76.1	74.7	+1.4
WHEAT MILLFEEDS			
Prices at prin. mkts.:			
Bran	39.25	39.00	+ .25
Midds. and shorts	40.25	39.95	+ .30
Index	71.8	71.4	+ .4
OTHER MILLFEEDS			
Prices at prin. mkts.:			
Hominy feed	44.30	44.45	— .15
Rice bran	29.50	29.50	...
Index	67.3	67.4	— .1
ALFALFA MEAL			
Prices at prin. mkts.	50.70	50.30	+ .40
Index	97.6	96.8	+ .8
MOLASSES, FEEDING			
Prices at prin. mkts.	24.66	24.32	+ .34
Index	73.4	72.4	+1.0
ALL FEEDSTUFFS			
Index	72.7	73.2	— .5
FEED GRAINS			
Prices at prin. mkts.:			
Corn	36.20	36.90	— .70
Oats	42.90	42.90	...
Barley	41.40	41.10	+ .30
Grain sorghums	34.70	34.50	+ .20
Index	59.4	60.3	— .9

*Base period of index is 1947-49.
Source: USDA.

W. A. Harris Heads Chicago Feed Club

CHICAGO—William A. Harris, St. Regis Paper Co., Chicago, was selected to serve as president of the Chicago Feed Club for 1961 at the group's recent annual meeting.

Other new officers include Norman R. Glass, Allied Mills, Inc., vice president; John J. Brennan, Abbott Laboratories, treasurer, and Lee H. Boyd, American Feed Manufacturers Assn., secretary. New directors include A. H. Fahrenkrog, Illinois Farm Supply, and B. J. Free, Badger By-Products Co., Inc.

The new officers were selected for their positions by a nominating committee headed by Gladwin A. Read, Gladwin A. Read Co. The retiring president is Gerald A. Karstens, Feed Age, who served during 1960.

New members of the Chicago Feed Club are as follows: W. D. Murphy, Jr., E. I. du Pont de Nemours & Co., Inc.; C. S. Welsh, Prince Mfg. Co., Bowmanstown, Pa.; R. David Swain, International Paper Co.; Carlton F. Evans, International Paper Co.; H. Earl Duncan, Miles Chemical Co., and John W. Wessman, Grain Processing Machinery Manufacturers Assn., Kansas City, Mo.

Oilseed Meal Futures In Downward Swing

MEMPHIS, TENN.—Less demand and lower prices on the cash market influenced a downswing in oilseed meal futures on the Memphis Board of Trade during the past week.

The only gains resulted from technical price adjustments in Eastern Trunk Line soybean oil meal.

Soybean oil meal business was weak for immediate requirements, dealers reported. Prior to this, some buying had occurred for forward positions, with the cash trade confident that forward prices would hold at their current levels.

At week's end, soybean oil meal markets, particularly the southern region, suffered excess conditions, mainly due to increased soybean crushings.

Futures and cash prices of oilseed meal futures have moved near their season's lows. The only anticipation for a better oilseed meal tone stems from improved mixed feed business.

Cottonseed oil meal appears to be developing a steady market.

Eastern Trunk Line soybean oil meal, in which no trades occurred, closed Tuesday unchanged to $1.75 ton higher than on Oct. 25. Unrestricted soybean oil meal was unchanged to $2.25 lower. And bulk solvent cottonseed oil meal was unchanged to $1 lower.

Trading for the period amounted to 2,000 tons of unrestricted soybean oil meal and 900 tons of bulk solvent cottonseed oil meal.

Citrus By-Products Shortage Reported

WINTER HAVEN, FLA.—Empty warehouses, anxious customers and a late-maturing citrus crop were reported this week to be causing strong supply and demand pressures in the citrus meal and pulp markets.

Observers said dairymen and cattle feeders, wanting a feed supply on hand in the event of cold weather, are pressuring pulp dealers for the first supply. But these called-for supplies are hard to find.

A similar short supply was reported to exist for other citrus by-products, such as molasses and meal.

INCORPORATION FILED

DOVER, DEL.—Rock Island Poultry Co. filed a charter of incorporation with the corporation department of the Secretary of State's office here.

FARM MIXING

(Continued from page 4)

disease problems we come up against."

Mr. Jeckel also makes and sells his own brand of pre-mixes.

"I don't have much time to spend on the business, but it does seem to be growing nicely," he says.

"If I could increase my premix volume, it would sell all right, but I do all the work myself and don't want to take on any additional overhead or labor costs.

"There is nothing complicated about mixing feed," he argues.

Another Illinois farmer, a turkey grower, is reported to have said he is saving $20 a ton on his feed by handling the entire feed mixing process on the farm.

"Not so," counters a feed man. "This might be the difference in cost of his basic ingredients over our single bag costs . . . but on a volume basis, and with all his mixing costs figured in, this $20 figure just isn't realistic."

(To date, no one has completed a real thorough study of economics and costs in this area, so Feedstuffs' objective here is only to bring to light a few comments from individuals representing both sides of the issue. There are no final answers, or single cost figures, that may be used, for each farm operation would demand individual appraisal.)

Four men in Iowa, the Monaghan brothers of Charles City, who own and operate a farm including beef cattle, turkeys and dairy cows, bring up another point. These men have been making their own feed "from the ground up" for over 18 years now, but they're thinking of switching back to commercial premixes, but not supplements.

"We know that by making our own premix here on the farm, we save from $1 to $1.50 per ton of feed," reports one of the brothers. "But the cost of labor is high, we have to carry a large inventory and I guess we're getting lazier. All in all, we aren't sure the saving we realize is worth it to us any more."

This farm sends to market over 1,500 beef animals and 100,000 turkeys annually. In addition, it produces and sells about 12,000 poults a week and supports a milking string of 110 cows.

The feed plant, valued at nearly $50,000, is a push-button operation. The brothers buy on a volume basis directly from the ingredient processing points.

"Our old feed plant burned down two years ago," says one brother. "The fact that this new one is standing here today is proof that we are sold on on-farm mixing.

"One of the primary reasons we have for switching to a commercial premix now is 'price.' The competition in the feed business is strong and salesmen are quoting us some pretty attractive prices.

"We have no strong desire to continue making our own premix when the prices on the commercial preparations are down to what we consider a reasonable level," they say.

Situations Different

Farm mixing is a controversial subject and even some of the farmers aren't in complete agreement on its advantages. Many of those who have tried farm mixing claim they have found the solution to lowering feed costs and raising profit margins.

At the same time, other cases can be cited where good operators have found it more economical to drop or alter their farm set-ups and buy commercial feeds and services again.

"No two operations are identical," says one feed man. "What might be working on one farm could be a real disappointment on another. That's why we in the feed industry feel it's so important that farmers understand true costs and evaluate fairly the service and quality they get with commercial feeds."

Feed Volume

At what point do farmers consider farm mixing? Feed men may dispute some of these things, but here is what some say: "About 100 tons annually seems to be an acceptable volume now. This would involve feeding about 250 hogs, 75 steers, 50 milk cows plus replacement stock, or 24,000 broilers. Most farmers mixing their own feed are operating on a much larger volume than this, however."

An agricultural economist at the University of Illinois, Dr. Roy Van Arsdahl, had this to say: "Farmers can't afford to haul grain and soybeans around the country for processing. For the small livestock producer, the commercially manufactured feed is the best buy. But farmers with expanding volume should consider on-farm mixing.

Farm-Mixing Costs

"Most farmers can get a pretty decent set-up for about $2,000. This would include an electric or push-button system which minimizes the labor requirements."

Dr. Van Arsdahl lists approximate equipment costs as follows: Base mill, $800; adequate wiring, $200; storage facilities $500 (three 500 to 700-ton bins); augers and motors, $250, and premixer, $200.

Some researchers say that a lot of the success of a farm mixing system is dependent upon how carefully the feed plant is designed.

"An inefficient or poorly planned operation demands lots of labor," says one engineer, "and it's likely that in many instances this labor could be put to more profitable use on other farm jobs."

Illinois' Dr. Van Arsdahl says that the labor factor is emphasized too much if the farmer is using an electrical system. "It really doesn't exist," he says, "for all the farmer does is push a button and go ahead with his other work."

H. B. Puckett, University of Illinois agricultural engineer, predicts that in the future, most farmers will be happy to turn over the manufacturing of premixes to commercial feed men.

"They'll want to get rid of the responsibility," he says. "Then, when the pigs get sick, the farmer can turn the problem over to his trained service man. This will mean that the feed dealer will be selling reduced tonnages, as compared to right now, but it will also mean that their function is as vital to farmers as ever."

Drug Company Role

One feed manufacturer says that apparently not every branch of the industry feels this way—"Some drug companies are sending their representatives right out to the farms to promote direct sales.

"I don't think this will ever be a serious problem, however," he continues. "In the first place, the volume sales will always go to the feed manufacturer. Certainly, we don't expect farm mixing to progress to the point where drug companies build much volume by selling directly to farmers.

"A second point is this: The drug companies aren't geared for this type of selling right now. They are set up to sell to the feed manufacturers, not to farmers. To try and reorganize for direct farm selling would be a costly maneuver, and one they probably wouldn't be anxious to tackle—especially if the potential is questionable."

Group Buying

One by-product of farm mixing is the development of group buying cooperatives. It appears that, at least in some areas, numbers of farmers are starting to join hands and buy ingredients on a large volume basis—for a lower price.

"When group buying is motivated by cost principles alone, it can lead to many problems," says one feed manufacturer. "Quality will drop off in a hurry. I know of one group that ran into trouble in just a few months because of its desire to cut costs.

"This one group reports it can cut costs $10 per ton—and this might be true over single bag costs. But on a volume basis, it would amount only to $1 to $2 per ton. It usually isn't worth the time it demands, and may not even pay the farmer for his investment in storage facilities."

"I'm skeptical of group buying, too," says an executive of a major company. "I feel the farmer would get further in most cases by sitting down and discussing his feeding problems with his commercial feed supplier."

One feed manufacturer sums up the situation with this comment: "The amount of farm mixing that develops in the future will depend a lot on the willingness of the feed industry to promote its strong points. Some of these points include service, product research, nutritional know-how, quality and better buying. The feed industry must learn to make prices flexible, and to adjust margins to the existing economy. Finally, it must be more and more aggressive in its attempts to accomplish and advertise improvements in feed products."

Another comments: "It's up to us to show feeders that they will be better off to depend on us specialists to provide dependable, competitively priced feeds and related services and to invest their time, talent and capital in other phases of livestock operations which will yield a better return. I am sure that we can do this, as we have done before."

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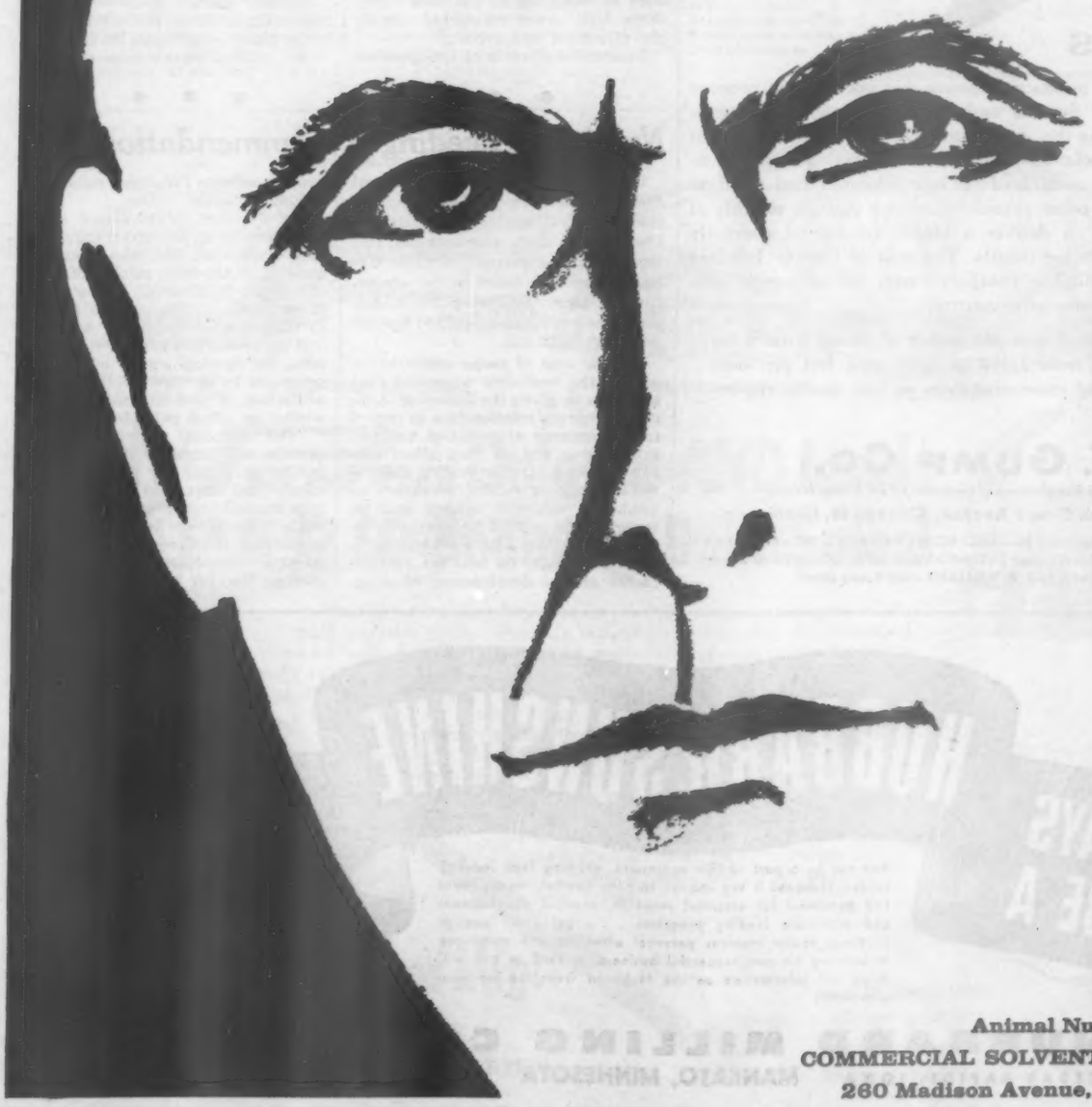

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Swine Conference Speaker Warns Producers to Solve Own Problems

By JAMES K. RUTTER
Feedstuffs Staff

LEXINGTON, KY.—"The outlook for the swine industry in the future is good if we will only pay heed to our past experiences, and avoid making the same mistakes in the future," said Allan Kline, former president of the American Farm Bureau Federation.

Mr. Kline was speaking to nearly 400 hog producers, packers, and research men attending the 3rd Annual National Swine Industry Conference held last week in Lexington.

Continuing, he said, "We've made more progress in recent years than ever before, although there is still a long, long way to go. But a firm foundation seems to be in place now, and it should be easier for hog producers to build a future in agriculture.

"We need intelligent approaches to our problems," Mr. Kline said. "One politician was recently quoted as saying that 'farmers must be provided with cheap credit.'

"I certainly don't feel that cheap credit is the answer in a private enterprise system. Private enterprise starts with a thing called savings. In turn, savings become capital, and this is a vital part of a private enterprise system."

Mr. Kline said that hog producers must produce only to meet demand—"the problems can't be solved as long as a surplus of pork is being marketed."

"It's obvious that some changes are going to have to be made," he continued. "We're not going to keep on piling up surpluses. The question is how we go about making the changes.

"Certainly, controlling the supply, or price, of pigs through political methods is not the answer. Under a compensatory payment, you'll grow hogs and send them to market for whatever they will bring. Then, the government will decide (through an 'easily calculated method' said one politician) just what price the producer should have for his pigs.

"You see, if we take the route of making the needed pork production adjustments by the political routes, we are automatically putting the caps on private enterprise.

"We will finally end up with a second-class citizen in agriculture. For this, and other reasons, we want only minimum assistance from the government. We want to solve our own problems and keep our independence," Mr. Kline concluded.

A total of 46 addresses were presented during the two-day conference. Six major addresses were presented to the entire group at the opening morning session. The other 40 talks were presented in 10 different workshops that were conducted during one afternoon and evening.

Summaries of some of the speeches follow (others will appear in succeeding issues of Feedstuffs):

THE SWINE INDUSTRY 10 YEARS FROM NOW—"I predict that by 1970, the cost of producing a pound of marketable pork in our better commercial operations will be no greater than the present cost of producing broiler meat," said Dr. W. P. Garrigus, department of animal husbandry, University of Kentucky.

"I also predict that by 1970, the per capita consumption of pork will be increased by 20%. Of course, to make these assumptions, I am presuming that the swine industry has intelligent, inspired leadership, and that the producers are just as smart and industrious as their competitors in the broiler and beef industries.

"What are the prospects? Performance testing and selective breeding have already taken us a long way. Today we are marketing twice as many No. 1 hogs as we did a few short years ago. How long can we continue to make improvement by this means?

"Our University of Kentucky Hampshire herd, in 9 years time, has improved to the point that 95% of its pigs now grade U.S. No. 1. Broad, systematic, and persistent use of these established selection procedures can certainly push our national average to 70 or 75%.

"Our industry must look beyond U.S. No. 1 or even meat hog certification requirements in a constant effort to improve our product. Is a market hog with a 31 in. side, a 1.0 in. backfat, a 7.0 in. loin eye, with nearly 30% of its carcass in loin and ham out of our reach? We don't think so; because 'U.K. Automation,' our 1959 International grand champion barrow, closely approximated these specifications.

"Lighter market weights for well-muscled meat-type, market hogs are in the picture, too," says Dr. Garrigus.

(Turn to SWINE, page 90)

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Nutrition, Feeding Recommendations

LEXINGTON, KY. — The National Swine Conference at Lexington included several workshop discussions. One of these dealt with nutrition and feeding, and summaries of these discussions will be found in the accompanying story. Following the discussions, the workshop submitted the following report:

"In the area of swine nutrition research, the workshop suggested that attention be given the following: Amino acid-energy relationships in regard to performance of gestation and lactating sows and as they affect carcass quality; carcass quality and flavor in pork as related to ration ingredients; nutrient balance and interaction as related to nutrient requirements; the effects of stress, including disease, on nutrient requirements and to development of nutritional programs for stress conditions, including disease.

"In the area of problems facing producers today, the group urged further studies on the economics and costs of on-the-farm mixing of feeds, of systems to minimize feed wastage, of nutrition of the sow in relation to reduction of embryonic mortality and improved livability of baby pigs. Also, the development of educational programs to increase application and utilization of present knowledge and studies on ration palatability.

"The workshop recommended that certain base lines be used in determining or evaluating production efficiency and suggested (1) pounds of pigs weaned and/or marketed per female in the herd at breeding time, (2) pounds of feed required per 100 lb. of pigs weaned and/or marketed including feed for the breeding herd."

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Symposium Speaker Sees Potentiation As Key to Improved Medicated Feeds

MADRID, SPAIN—"Scientific evidence points to a combined use of various potentiating methods as a promising way to boost the biological availability of antibiotics in medicated formula feeds," a U.S. scientist has reported here.

Dr. H. G. Luther, director of agricultural research for Chas. Pfizer & Co., Inc., explored current U.S. progress in potentiation studies in a presentation of a paper before the second International Animal Feed Symposium.

Some 50 agricultural scientists from 15 nations gathered in Madrid (Oct. 18) for the five-day international meeting. In his presentation, Dr. Luther described recent work which showed, for example, that a combination of certain potentiation methods can produce a four-fold increase in broad-spectrum antibiotic adsorption into the blood stream of an animal.

Several research workers have demonstrated that the degree of utilization of many antibiotics is reduced by the presence of certain mineral constituents of normal animal diets, Dr. Luther said.

He pointed out that "in practice, the main inhibitor is calcium, and its temporary reduction in the ration during periods of broad-spectrum antibiotic medication will allow, in general, a doubling of the adsorption of the antibiotic, as in poultry, for example."

It is theoretically possible to reduce the action of the mineral inhibitors by special additives. However, he said, from a practical basis, temporarily reducing and/or modifying the calcium supplement from that normally used is the most economical and desirable procedure. Care must be exercised to see that the animal's long term nutritional requirements are respected, Dr. Luther cautioned.

Other Potentiators

Dr. Luther reported on other potentiators of antibiotics that have been employed to increase antibiotic adsorption, including glucosamine and terephthalic acid (TPA). TPA has been experimentally studied in depth as an antibiotic adjunct in the field of animal disease medication. Dr. Luther showed that it probably acts through decreasing urinary excretion of the broad-spectrum antibiotics. As it works through a different mechanism than by eliminating calcium interference, its effect is additive to the antibiotic potentiating effect obtained by calcium removal.

For example, Dr. Luther noted, it was possible to obtain up to four times the broad-spectrum antibiotic adsorption by the combined practice of TPA addition and calcium reduction. TPA is not an approved feed additive in the U.S.

Dr. Luther reported on a series of tests conducted by Pfizer for the evaluation of various potentiating methods under different conditions. In these tests, different broad-spectrum antibiotics were varied in their gram/ton level, and the resulting blood level was recorded. In other tests, the amount of antibiotic was held constant at different gram/ton levels and TPA was the variable. The same scheme was applied to phosphorus and to varying levels of calcium.

The results of these tests, according to Dr. Luther's paper "show decided interrelationship between the action of the various potentiators. Terramycin blood serum levels were found to have increased markedly at

(Turn to SYMPOSIUM, page 94)

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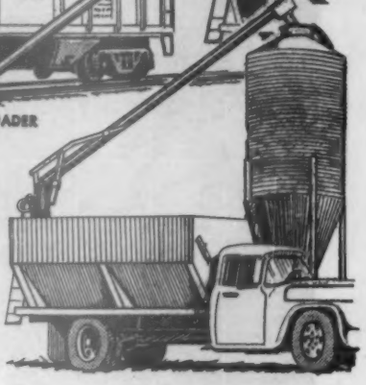

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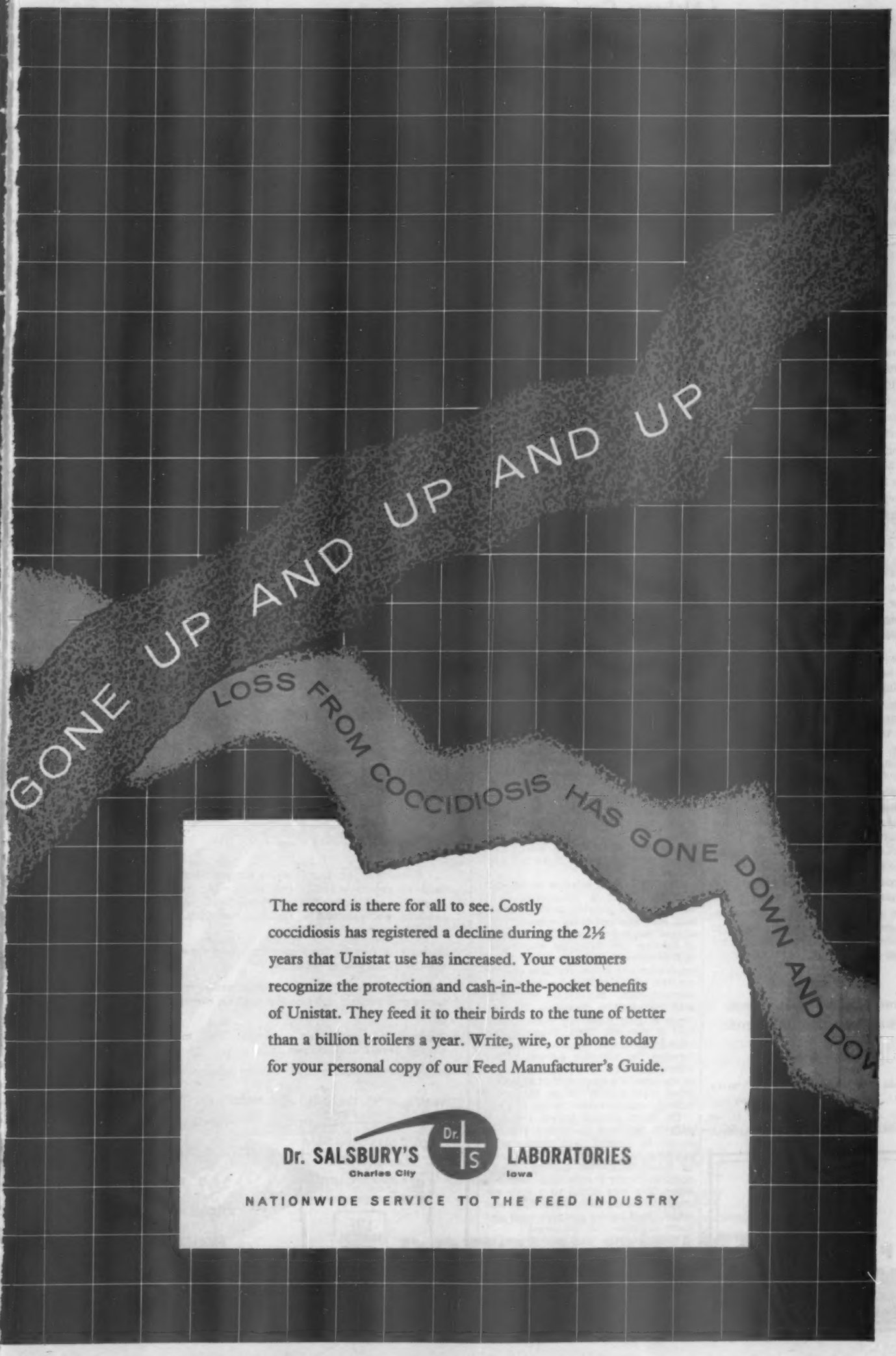

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Feed for Thought

WHAT ABOUT PROTEIN BLOCKS?

The October 15th issue of Feedstuffs carried a very comprehensive report by Marty Newell on the increasing popularity of protein blocks for cattle feeding in the West and Southwest. The interest in this form of feed seems to be spreading rapidly. The technical staff at Peter Hand has received many requests for formulation of these blocks for cattle, sheep and horses during the past months. Requirements vary by area. Some manufacturers call for hard blocks with 10 to 15% salt to limit intake while others want softer blocks to encourage protein intake. The latter is particularly true of the wheat grazing area. Some of these blocks must be soft enough to be cut easily with a knife. Most of these blocks rely on urea to provide a portion of the protein equivalent. Some require binding ingredients, such as guar meal for proper hardness.

Feed manufacturers interested in producing protein blocks are invited to call or write Peter Hand Foundation for suggested formulations and other technical assistance.

While the protein block seems to be a "natural" for cattle, sheep or horses on range, particularly in inaccessible areas, there is some talk of using similar blocks for cattle and sheep in feedlots and also for turkeys on range. This, it seems, would be a movement contrary to the general trend toward complete rations. Why sacrifice the many advantages, including properly balanced rations of complete feeds in pellet or meal form, for the labor saving of a protein block program? Variation in protein intake would be a problem with the resultant possibility of uneven growth and fattening. Here again is a trend which could be carried to extremes. Application of the protein block to fattening and finishing programs requires a second look.

J. R. LINSNER
Director of Technical Services
PETER HAND FOUNDATION

★ ★ ★

Look for "Feed for Thought" every month. This popular column appears regularly in this same place (page 14) in the first Feedstuffs issue of each month.

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Alabama Conference

Importance of More Amino Acid Knowledge Stressed

By ROGER BERGLUND
Feedstuffs Managing Editor

AUBURN, ALA.—Chickens do not eat percentages; it is actual amounts of amino acids consumed that count, and energy content is the most important factor influencing amino acid intake.

This was pointed out by Dr. H. M. Scott, University of Illinois poultry scientist, in a talk at the Alabama Nutrition Conference on problems to consider in formulating poultry rations adequate in amino acids.

Dr. Scott also told Alabama feed men that it appears that amino acids in excess of requirements may actually cause a stress, not just result in a waste so far as protein synthesis is concerned.

Dr. Scott's talk was one of several given at the Alabama conference covering various aspects of livestock and poultry nutrition. The conference, held Oct. 20-21 at Auburn University, was sponsored by the Alabama Feed Assn., Alabama Extension Service and the university's School of Agriculture.

Other talks by university and guest experts dealt with such things as dairy cow and calf feeding, swine feeding and trace element nutrition in ruminants.

Commenting on the importance of more knowledge of amino acids, Dr. Scott said he believes that most differences in broiler feeding results are from amino acid content or balance of rations. This is a bigger problem than minerals, for example, he said, and there is still a great deal to be learned.

Dr. Scott cited information on the sodium requirement to indicate that too much salt has been fed. A similar problem exists in amino acids. Purchasing is on the basis of protein content, but there still is not good, accurate information on amino acids.

"When the requirement for an amino acid is expressed as a percentage of the ration, in the conventional manner, it is valid only in so far as it insures an adequate intake of the amino acid," Dr. Scott pointed out. "Therefore, the requirement, expressed as a percentage of the ration, is not constant and will vary from ration to ration.

"It will vary in relation to the extent that feed is voluntarily consumed by the growing broiler, laying hen, etc. The voluntary consumption of feed can be influenced by a number of factors, but from the standpoint of feed formulation, perhaps the most important one is the available energy content of the ration. As the energy concentration increases, voluntary feed consumption decreases. The reverse is true when the energy content is lowered. Thus, changing the energy content of the ration will determine the absolute amount of an amino acid that is consumed, and it is the absolute amount that is correlated with growth rather than percentage concentration in the ration."

Dr. Scott showed Illinois research data to illustrate his points. For example, he showed chick results with arginine content at 1.3% of the diet in three diets with varying energy content. Better results were obtained when fiber was added to a high energy diet with casein. When fiber was added, feed intake was increased and more arginine was consumed.

Whenever the bird eats 7 gm. of arginine, the requirement is met, Dr. Scott said. The chicken is eating arginine, not percentages. And it is energy that influences feed intake and amount of amino acid consumed. It is necessary to have better information on amino acid requirements in relation to energy, Dr. Scott pointed out.

There is nothing constant about calorie-protein ratio, the Illinois scientist said.

It is necessary to increase protein level as energy is increased, he continued, but what is not known is how to increase amino acids. Some think that all can be increased as a percent of the protein. "But," he added, "we don't believe this is constant; the increase is not in proportion to protein level."

As energy increases, protein requirement is increased, but it is necessary to know amount of each amino acid required in relation to protein.

Dr. Scott went on to note that another factor receiving increased consideration, at least experimentally, is the question of excess amino acids in the ration. He said that more attention should be paid to the problem of excesses.

There are several reasons why this area should be explored. First, these amino acids—i.e., those in excess of the requirement—are wasted in so far as protein synthesis (true growth) is concerned, Dr. Scott noted. Secondly, he said, they may under certain conditions place a stress (decreased growth) on the bird; and, finally, they have been shown to increase the requirement for certain other amino acids, notably glycine and arginine.

Dr. Scott cited data to illustrate his points on amino acid excesses.

Among other things, he showed that lysine helps remove the stress caused by excess amino acids. Arginine also helps reduce the stress, and a combination of arginine and glycine helps.

Consideration should be given to excess amino acids in broiler diets, Dr. Scott said. An effort should be

(Turn to AMINO ACID, page 94)

CARCASS DIFFERENCES—A carcass demonstration was part of presentations on swine breeding and feeding made at the Alabama Nutrition Conference. In the first p'cture, Dr. H. F. Tucker (left), and Ray Cavender of Auburn University show the difference between U.S. No. 1 and No. 2 (or high 3) carcasses. In the second photo, they show the difference in loin size.

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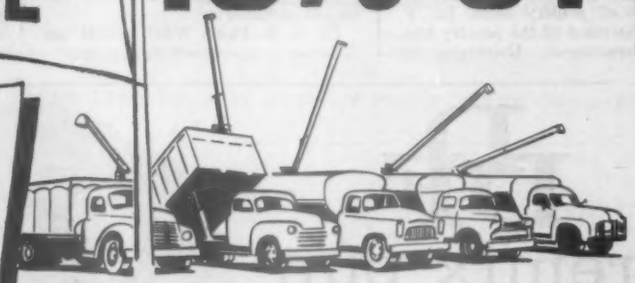

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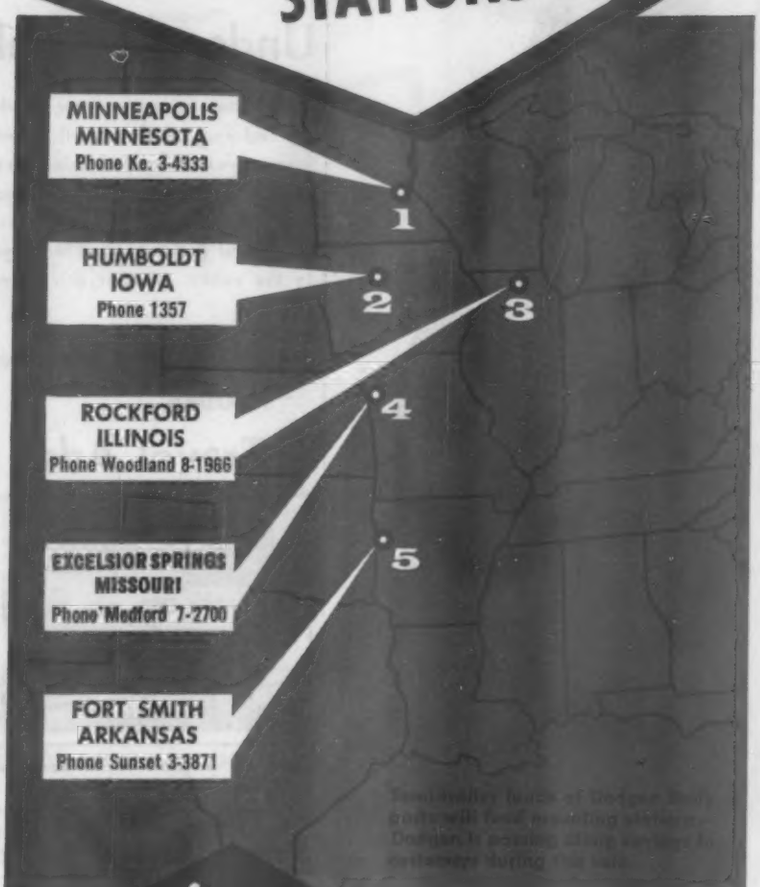

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Washington Animal Industry Meeting Set for Nov. 14-15

MT. VERNON, WASH.—Washington's 13th annual Animal Industry Conference for feed manufacturers will be held here Nov. 14-15. Conference sessions will be held at Skagit Valley College.

The annual research review is cosponsored by Washington State University and the Washington State Feed Assn.

Dr. Leo S. Jensen, Washington State University poultry scientist and program chairman, announces the following lineup of speakers and topics:

The slate of speakers will be headed by a leading authority on the energy value of poultry feeds. Dr. F. W. Hill, chairman of the poultry husbandry department, University of California at Davis, will address the conference twice. His topics are: "Energy Nutrition of Poultry" and "Soybeans and Soybean Products in Feeds."

Dr. Hill was a member of the Cornell animal nutrition and poultry husbandry staff for 11 years before moving to the University of California in 1959.

The other special guest speaker is from Canada. Prof. Jacob Biely, chairman of the poultry science department at the University of British Columbia, Vancouver, will review highlights of nutritional research at his institution.

A banquet Monday night, Nov. 14, will be held at the Elks Lodge in Mt. Vernon. Banquet speaker, Dr. I. L. Kosin, WSU poultry scientist and Russian-language professor, will give a report on his month-long tour of nine major farming areas in Russia.

Other WSU speakers and their topics are as follows:

Dr. I. A. Dyer, WSC animal nu-

(Turn to WASHINGTON, page 96)

Iowa to Announce Mixed, No-Hay Ration for Lambs

AMES, IOWA—Iowa State University sheep nutrition researchers expect to announce on Nov. 15 a new, no-hay, high-energy lamb fattening ration that increases gains, feed efficiency, carcass quality and market margin over feed cost on a grade and yield basis, Animal Husbandman Walter Woods reports.

The new ration is to be presented as part of the feed and nutrition report at the All-Iowa Sheep Day starting at 10 a.m. at the University Memorial Union Nov. 15. The new ration contains 80% concentrate and 20% ground corncobs as the only roughage. Prof. Woods said it is completely ground and mixed for mechanized feeding.

In the experiments at the university it brought feeder lambs to high-choice grade before they got too heavy. On a grade-and-yield selling basis the lambs on this ration brought more net return than similar lambs on conventional feed.

Results of eight other lamb feeding experiments will also be reported at the Sheep Day, Prof. Woods said. Principal speaker will be U. S. Garrigus, sheep authority from the University of Illinois. Otis Budlong of Cedar Rapids and Eldon Kay of Marne will be members of a panel to discuss sheep problems with a university veterinarian, animal husbandman, agricultural engineer and agricultural economist. The Iowa State Lamb Feeders Assn. will hold its annual meeting and election of officers. Sessions will be in the Gallery room at the Memorial Union.

H. O. Fisher Dies

COLUMBIA, S.C.—Henry O. Fisher, a territory manager for Dr. Salsbury's Laboratories for 15 years, died unexpectedly Oct. 21. Mr. Fisher had moved to the South Carolina territory two years ago after working in Pennsylvania for many years.

He is survived by his widow, Nina; three sons, Thomas H., John G. and Joseph M., and a daughter, Judith.

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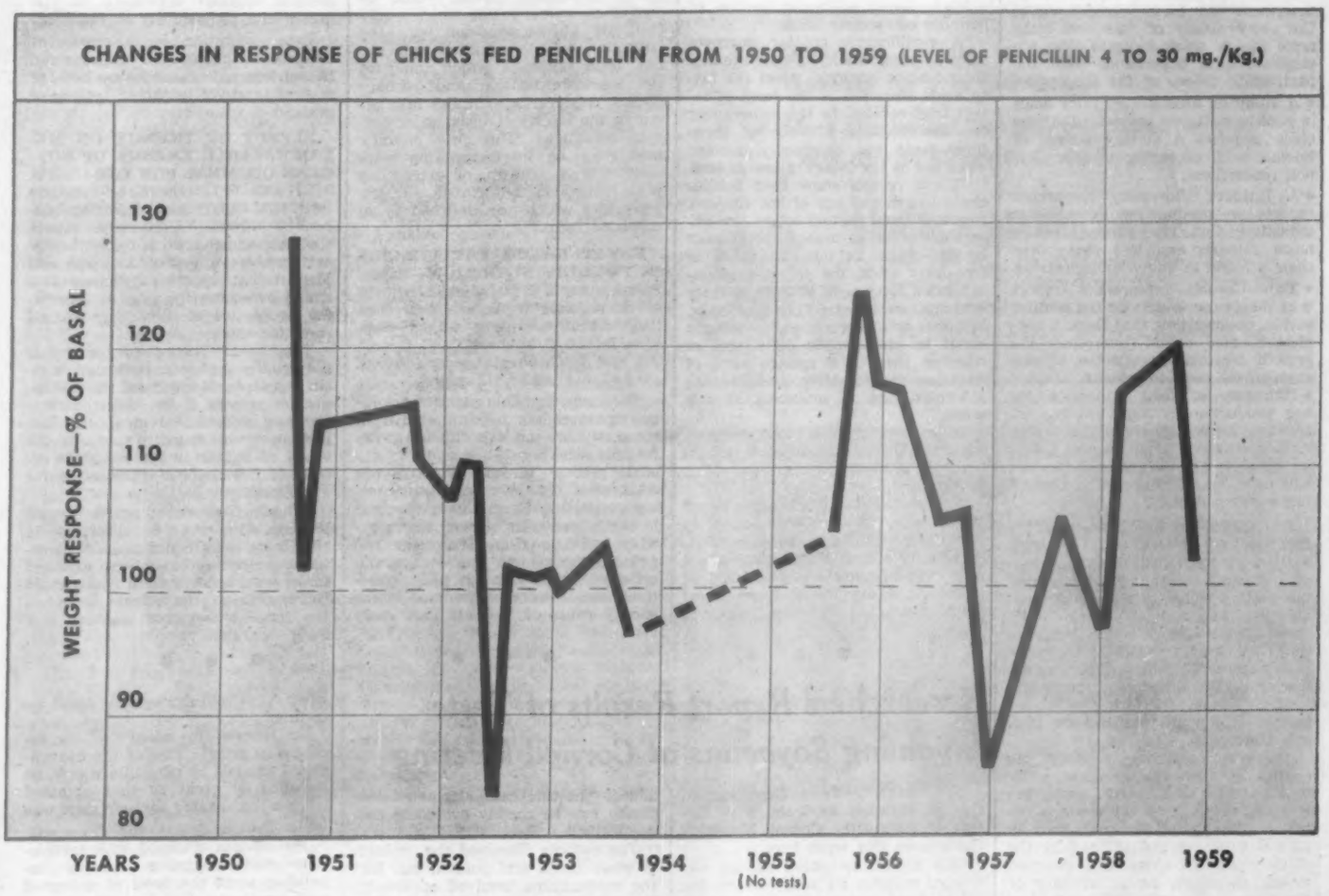

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Cornell Conference Speakers Report Indications of Poultry Feeding Tests

BUFFALO, N.Y.—Results of poultry nutrition research reported by Cornell University scientists and guest speakers at the Cornell Nutrition Conference for Feed Manufacturers here in the Hotel Statler Nov. 2-4 included those coming from work on utilization of fats and fatty acids, calcium and phosphorus, trypsin supplementation and protein requirement of laying hens.

Reviews of the papers presented—some of which include summaries of related research in addition to new findings—indicate the following:

- Cornell experiments conducted to determine the factors which affect the absorbability of fats and fatty acids in the chick indicate that absorption is in accordance with the particulate theory of fat absorption.
- A study on unsaturated fatty acids in poultry nutrition indicates that the chick requires a dietary source of linoleic acid, according to four Cornell researchers.
- A Rutgers University researcher reports on preliminary experiments indicating that laying hens require more calcium and less phosphorus than is found in many laying rations.
- Two Cornell researchers report that their experiments do not confirm earlier observations that trypsin supplementation would overcome the growth depressing properties of raw soybean oil meal for chicks.
- Efficiency of feed utilization for egg production is improved by increasing the energy content of laying rations only when the protein levels in the diets are adequate to support maximum egg production, a Cornell researcher reports.

FACTORS AFFECTING UTILIZATION OF FATS AND FATTY ACIDS BY THE CHICKEN—Experimental work conducted to determine the factors which affect the absorbability of fats and fatty acids in the chick gives evidence which indicates that the absorption of fat in the chick is in accordance with the particulate theory of fat absorption, according to R. J. Young and Ruth Renner, department of poultry husbandry, Cornell University.

The two researchers report, "The results of these experiments show that palmitic and stearic acids, the two saturated fatty acids which occur in the highest concentration in animal fats, are not utilized by the chick when fed alone. The question arises, therefore, as to whether or not these fatty acids are used when fed in the form of the intact triglyceride molecule. Miss Renner and F. W. Hill have shown that the utilization of various triglycerides decreases upon hydrolysis. This decrease appears to be in direct proportion to the amount of saturated fatty acid present in the mixture and the magnitude of the decrease suggests that the saturated fatty acids may not be utilized in mixtures of free fatty acids.

"To determine if this is actually the case, the fecal fat and dietary fats from chicks fed various intact and hydrolyzed fats were analyzed by gas phase chromatography for their constituent fatty acids. From these data it was possible to calculate the absorbability of each of the fatty acids from either the triglyceride or the free fatty acid mixture fed. In the fatty acid composition of the tallow and lard there are two major differences. Tallow contains about 12 or 13% more saturated fatty acids, primarily stearic and myristic, with a consequent decrease of about 13% in the unsaturated fatty acids as compared to lard. The unsaturated fatty acids in lard are made up of about 43% oleic and 12% linoleic, while beef tallow contains primarily oleic acid as the unsaturated fatty acid.

"Although palmitic and stearic acids when fed alone are not absorbed by the chick, they are utilized to a significant degree when fed as free fatty acids from hydrolyzed lard or beef tallow. Since the improvement in utilization is greater in the lard fatty acid mixture than in the tallow mixture, it appears that the amount and type of unsaturated fatty acid present may influence the utilization of the saturated fatty acid. Thus it may be interpreted that the presence of the unsaturated fatty acids in a mixture improves the utilization of palmitic and stearic acids.

"A significantly greater improvement in absorbability of palmitic and stearic acids occurred when the fatty acids were fed in the form of intact triglycerides. In this experiment the absorbability of each of these fatty acids was essentially doubled when fed as the intact tallow or lard.

"These results show that besides chain length and age of the chicken, two additional factors affect the absorbability of saturated fatty acids by the chick. In the absorption of free fatty acids, the presence of unsaturated fatty acids in the free fatty acid mixture appears to be important. Whether this improvement is brought about by one specific fatty acid or whether there is a specific ratio of the unsaturated fatty acids to the saturated one, is unknown at this point."

In experimentation to determine what additives would improve the absorbability, the researchers found the following:

"It was found that when the intact triglyceride, triolein, was added to palmitic acid, a linear increase in absorbability of the latter was obtained as a ratio of triolein to palmitic acid increased. A maximum absorption of palmitic acid of 50% was obtained with three parts triolein to one part of palmitic acid. In a similar manner it was found that the addition of graded levels of 1-monoolein when added to palmitic acid increased the absorbability of the latter up to 18% with one part monoolein to four parts palmitic acid. Further increases in the level of monoolein did not increase the absorbability of palmitic acid.

"A number of reasons can be given for these observations. Monoglycerides in general are good emulsifying agents. Triolein, by virtue of hydrolysis by pancreatic lipase, would be converted to monoolein, which would facilitate a fine emulsion with the palmitic acid. In addition evidence has been obtained which indicates the interesterification and perhaps di- and triglyceride synthesis may occur in the intestinal tract under certain conditions. Thus the palmitic acid may be interesterifying with oleic acid in triolein, or esterifying with monoolein to form di- and triglycerides which are absorbed as an emulsion form."

UNSATURATED FATTY ACIDS IN POULTRY NUTRITION—Experiments in this area indicate that the chick requires a dietary source of linoleic acid, according to D. T. Hopkins, Dr. M. C. Nesheim, L. B. Carew, Jr., and L. C. Norris, department of poultry husbandry, Cornell.

They report, "The quantitative requirement cannot be estimated from these studies, and it is difficult to determine whether the essential fatty acids present in vegetable oils are responsible for their growth promoting properties. Recent data obtained in our laboratories showed that stepwise hydrogenation of soybean oil reduced the growth promoting properties of the oil although only a relatively small decrease occurred in the energy value of the fat. This study suggests that the more unsaturated fatty acids in the oil are responsible for its growth-promoting properties, or that some unknown substance is destroyed by hydrogenation."

The four researchers agreed that further studies will be necessary to determine the relative importance of the essential fatty acids in poultry nutrition.

CALCIUM AND PHOSPHORUS FOR THE LAYING HEN—Preliminary experiments indicate the laying hens require more calcium and less phosphorus than is found in many laying rations at the present time, according to Dr. Paul Griminger, department of poultry science, Rutgers University, New Brunswick, N. J.

Dr. Griminger says, "In our experiments special attention will be given to a possible interrelation between two minerals, in order to investigate whether calcium could be increased and phosphorus simultaneously decreased without detriment to the health and productivity of the hen."

Experimentation is underway at the present time to study calcium and phosphorus balance of laying hens at several levels of intake of both minerals.

EFFECT OF TRYPSIN ON METABOLIZABLE ENERGY OF SOYBEAN OIL MEAL FOR THE CHICK—Dr. M. C. Nesheim and Sergio Brambila, department of poultry husbandry, Cornell University, report their experiments do not confirm the earlier observations of Almquist and Merritt that trypsin supplementation would overcome the growth depressing properties of raw soybean oil meal for chicks.

They said, "The reason for this is not readily apparent. Although trypsin supplements improved the metabolizable energy of the diets containing raw soybean oil meal, this improvement was found to be due to the effect of trypsin in reversing the effects of raw soybean oil meal on fat absorbability.

"The mechanism of action of raw soybean oil meal on fat absorption in the young chick is not clear. No antilipase activities have been reported for raw soybean oil meal which could correspond to the effects from an

(Turn to POULTRY, page 22)

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Researchers Report Results of Tests Involving Soybeans at Cornell Meeting

BUFFALO, N.Y. — Experimental studies covering soybeans were decreased during the Cornell Nutrition Conference this week here.

One report compared solvent extracted soybean oil meal to corn distillers dried grains with solubles and linseed oil meal as a high protein supplement for lactating cows; another involved studies on the improvement of the nutritional value of raw soybeans, and another covered counteracting the unfavorable characteristics of soybeans.

Summaries of these presentations follow:

STUDIES OF THE AVAILABILITY OF TRACE MINERALS IN SOYA DIETS—Counteracting the unfavorable characteristics of soybeans was discussed by Dr. L. C. Norris and P. N. Davis, University of California, Davis.

The talk was based, in part, on a paper by the authors entitled, "The Metal-Binding Properties of Soybean Protein," published in Feedstuffs, Aug. 27, 1960.

"The advantages of many of our most useful feedstuffs are most frequently accompanied by drawbacks which must be overcome before they can be fed successfully," the scientists said.

The discovery that soya proteins increase the requirements for some of the trace minerals has revealed another disadvantage for soybeans, they added. "In this case also, any deficiency can be readily overcome economically."

The authors discussed the problem in some detail and pointed out that the mechanisms involved apparently have broad nutritional implications and require an enlargement of the present conception of animal nutrition.

EXPERIMENTAL STUDIES ON SOYBEANS—Results of experiments seeking to explain three well established means of improving the nutritional value of raw soybeans were reported by Dr. R. H. Barnes of the host school.

The means are: (1) The application of heat, (2) the addition of supplementary methionine and (3) the inclusion of an antibiotic such as penicillin in the diet.

When penicillin was added to diets of rats at 20 mg. per 100 gm., growth rate was stimulated in conventional rats receiving either 25% or 50% unheated soybean diets, said Dr. Barnes. However, under these identical conditions, penicillin did not cause any increase in growth rate when coprophagy was prevented.

"From this observation," said Dr. Barnes, "it has been assumed that the antibiotic causes an alteration in the microflora of the large intestine where absorptive processes are poor and that some product of fermentation becomes available to the rat only when recyclized through the small intestine."

Dr. Barnes also noted that the increase in growth rate of the conventional animals by penicillin was in no instance as great as that obtained when a well-heated soybean meal was fed.

The results obtained with methionine supplementation differed depending upon the level of unheated soybean in the diet, he said. In general terms, supplemental DL-methionine at levels of either 0.3% or 0.6% in the diet provided equal growth increases in both the conventional and the coprophagy-prevented rats when 25% unheated soybean was fed.

However, he noted, with 50% soybean in the diet, the characteristic growth stimulation of methionine was seen only in the conventional rats. When coprophagy was prevented, little or no growth stimulation from methionine was observed.

Methionine supplementation of heated soy meal gave the characteristic growth promotion in both conventional and coprophagy-prevented rats when the soy meal was fed at a level of 25% in the diet, said Dr. Barnes. At 50%, the heated soy meal gave optimal growth with no increase in either conventional or coprophagy-prevented rats with added methionine. Obviously, the heated soy at this level was providing an optimal quantity of utilizable methionine.

In nutritional improvement by heat treatment, the effect of preventing coprophagy was not marked, he said. These studies suggest that in the coprophagy-prevented rat, growth rate

(Turn to SOYBEANS, page 22)

Ruminant Nutrition Receives Attention at Cornell Event

BUFFALO, N.Y.—Results of tests involving frequency of feeding, a urea-biuret comparison and fat additions to ruminant diets were reported this week at the Cornell Nutrition Conference here.

Three reports were given on Cornell research involving ruminants, and one group from Iowa State University reported on its studies.

Following are some of the points made during the discussions:

- Young lambs fed eight times per day gained 64% more weight than lambs fed the same amount of feed in one meal.
- Experiments suggest that biuret does not appear to be as effective a protein replacement as urea in ruminant rations.
- The result of fat additions to ruminant diets cannot be predicted with certainty.
- The new born calf is unable to utilize complex carbohydrates, and high quality protein and many B-complex vitamins are required.

Summaries of the four reports follow:

SOME EFFECTS OF FEEDING FREQUENCY ON THE UTILIZATION OF FEED BY RUMINANTS—The feeding of eight meals per day resulted in a higher rate of body gain in growing lambs, a greater retention of nitrogen and a more efficient use of the digested energy than did the feeding of one meal per day in studies in which the total feed intake per unit of metabolic size per day was constant, Cornell studies indicate.

The frequency of feeding had no effect upon the digestibility of nitrogen or energy, report Dr. J. T. Reid, A. H. Rakes and E. E. Lister.

Data show that young lambs fed eight times per day gained 64% more weight than lambs fed the same amount of feed in one meal, the researchers report. Although digestibility of nitrogen and energy was not affected by feeding frequency, lambs fed eight times per day excreted 20% less nitrogen in the urine and produced 20% less heat than those given one meal per day.

The frequency with which older sheep (ca. 2.5 years) were fed did not influence their body-gain response or the efficiency with which they utilized the same diet that was fed to the young lambs.

These studies are being continued to determine the underlying causes of the effects associated with feeding frequency and the conditions under which the feeding of young ruminants might be practicable. It needs to be determined whether the effects of frequency of feeding are associated with the composition of the diet, the level of feeding, the synthesis of amino acids by the microflora and the quantitative relationship between the amino acids and the other nutrients absorbed, the researchers say. Also, it seems possible that the absorbed end-products of digestion might vary with feeding frequency and, therefore, might affect the efficiency of energy utilization, they add.

"Under conditions of mechanical feeding," the researchers say, "it might be feasible to feed at frequent intervals young ruminants which are to be slaughtered for meat purposes."

UREA AND BIURET FOR RUMINANTS—"Although it is difficult to detect much difference between urea and biuret statistically in any given experiment, this series of experiments, as well as others, when taken together, suggest that biuret does not appear to be as effective a protein replacement as urea in ruminant rations," three Cornell researchers reported.

T. C. Campbell, Dr. R. G. Warner and Dr. J. K. Loosli added that "it seems reasonably certain that biuret is not better than urea."

The three reported on tests comparing soybean oil meal, urea and biuret as nitrogen supplements to ruminant rations. Growth and feeding trials with dairy animals, and nitrogen balances, digestion coefficients and net protein values with both lambs and bull calves were conducted.

"With this series of experiments," the researchers report, "all supplements are useful sources of nitrogen, probably in the descending order of soybean oil meal, urea and biuret, respectively."

Additional studies in progress indicate the importance of the preliminary period before making measurements—this seems especially true for biuret, say the researchers. Evidence by two other groups of workers at the Cornell station indicates that a variable preliminary period of four to six weeks is necessary before biuret enzyme activity and/or bacteria capable of utilizing biuret emerge. On the basis of two sheep in a pilot study, nitrogen balance appears to suddenly improve at about the same time.

All of these preliminary observations, along with the West Virginia work on the necessity for adaptation by rumen microflora, seem to fit in well with the apparent lag in the growth curves for the NPN compounds, say the researchers. Further work is now in progress on what the nature of this adaptation time is.

THE PLACE OF ADDED FAT IN RUMINANT RATIONS—The addition of fat to adult ruminant rations results in a complex interaction with the nitrogen and mineral constituents of the diet which are not completely understood, said Dr. R. G. Warner of Cornell.

As such, he added, the results of fat additions to such diets cannot be predicted with certainty.

Dr. Warner said that a survey of literature would suggest that the reluctance of the feed industry to use added animal fat in ruminant rations is justified. "In only a few instances has added animal fat been demonstrated superior to an equal amount of energy in the form of cereal grains, and under certain conditions, it has been detrimental," he said. "In many cases, the digestibility of the nutrients is significantly depressed with resulting lowered performance."

Dr. Warner said that in beef cattle, added fat is apparently better utilized by older cattle. Preliminary results of studies with lactating cows are promising, but need further work, he said.

Fat has been successfully used in calf starters, he noted. Recent Cornell experiments have demonstrated that coconut oil can be successfully incorporated into a milk replacer at a level of 25%, yielding a product essentially equivalent on a performance basis to an equal amount of energy from whole milk, he said. However, growth experiments have shown the added fat did not increase the rate of gain over a low fat replacer when a gain of approximately 1.0 lb. per day was all that was required. The low fat replacer was, however, unsatisfactory for veal production, he added.

FUNCTIONAL DEVELOPMENT OF THE DIGESTIVE SYSTEM OF THE CALF—The newborn calf is essentially a monogastric animal insofar as dietary requirements are concerned, Dr. N. L. Jacobson, Dr. A. D. McGillard, J. T. Huber and J. D. Sutton, Iowa State University, Ames, pointed out.

Thus, the researchers noted, high quality protein and many B-complex vitamins are required, and the calf is unable to utilize complex carbohydrates. Furthermore, the young calf is limited in its ability to digest mal-

(Turn to RUMINANTS, page 22)

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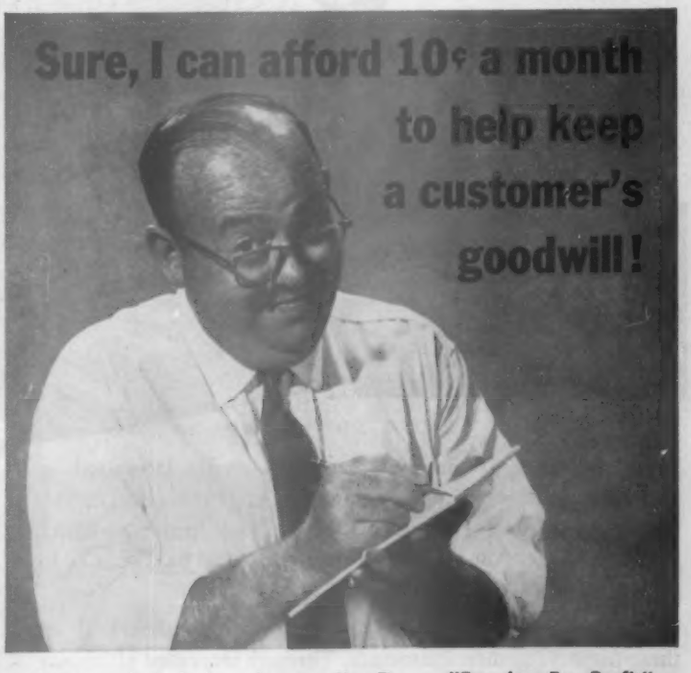

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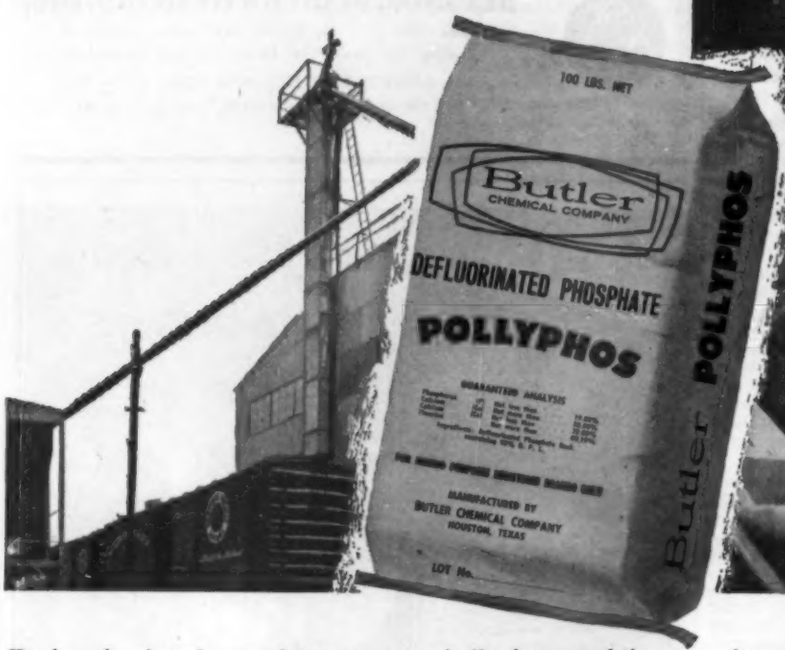

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Review Literature On Availability Of Phosphorus

BUFFALO, N.Y.—A critical review of the literature on the availability of phosphorus from various supplements for swine and cattle was presented by Dr. S. E. Smith, M. B. Wise and R. A. Wentworth, animal husbandry department, Cornell University, at the Cornell Nutrition Conference.

There was also some summarization of unpublished data for dairy calves from Cornell studies.

The three indicated that a summary of information on swine shows that studies "critically evaluating the phosphorus availability are few in number; the studies reported are semi-quantitative and only approach the precise data available for chicks; and the phosphorus of dicalcium phosphate, monocalcium phosphate and phosphoric acid are approximately equally available, followed closely by bonemeal, defluorinated rock phosphate and Curacao Island phosphate and least available from phytin phosphorus and colloidal phosphate."

They continued, "The generally poor responses in pigs when fed colloidal phosphate may be due to the low availability of the phosphorus and/or the relatively high fluoride content. Clarifying studies are under way in some laboratories, but will not be reviewed here."

Moving on to the dairy calf area, the researchers said, "For dairy calves weighing from about 160-280 lb. the phosphorus of dicalcium phosphate, a defluorinated rock phosphate and Curacao Island phosphate was highly available, but slightly more so for dicalcium phosphate than the other two. The phosphorus of colloidal phosphate was significantly less available than the other three carriers."

Hatchery, Processing Facilities Planned By Arkansas Valley

WALDRON, ARK.—Arkansas Valley Industries, Inc., Dardanelle, Ark., plans to open a new hatchery and a new poultry processing plant here if local residents approve an industrial bond issue.

Scott County residents will vote Nov. 28 on two bond issues totaling $500,000 to be used for construction of the two plants which would be leased to the company.

AVI announced recently it plans to install some $500,000 worth of equipment in the plants.

An order setting the date of the bond election was signed recently by Judge John McGraw. A $340,000 bond issue, which would not require taxation, will be voted under a state industrial bond issue law. And a $160,000 issue, provided under a special law, will require approval of a five mill tax levy.

Jack Plemmons, president of the Scott County Industrial Development Corp., said taxes under the $160,000 bond issue would be collected for three years to provide a reserve fund. He said, however, that after three years the AVI rental payments would be sufficient to retire the bonds.

Harold Snyder, AVI president, said the processing plant will employ some 250 persons to begin with. The hatchery is expected to have 25 employees.

Mr. Snyder said AVI believes its Scott County operation will grow within the next few years to be as large as AVI's present operation. The firm now employs about 500 persons and processes some 15 million broilers a year. Its main facilities are in the Dardanelle-Russellville area.

AVI has some 350 poultry producers and seven subsidiary feed dealers in this Arkansas River Valley region. It operates a push button feed mill here. Mr. Snyder said the facility is producing feed for approximately 1,200,000 broilers.

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SOYBEANS

(Continued from page 18)

is improved by heat treatment of soy meal, but the improvement is not quite as great as that observed in the conventional rat.

A possible explanation of the abolishment of methionine supplementation effects at high levels of unheated soybean when coprophagy is prevented is that large quantities of raw soybean cause a nutrient deficiency that is secondary to the primary deficiency in methionine. All possibilities have not been explored, said Dr. Barnes, but as yet no experimental verification for this explanation has been obtained.

"If a secondary deficiency is caused by feeding high levels of soybean meal to coprophagy-prevented rats, this deficiency is overcome to some degree by heat treatment," said Dr. Barnes. "Even though coprophagy is prevented, a definite improvement in growth was obtained with heated meal."

Another possibility that must be considered is that at high levels unheated soybeans are causing some toxic manifestation, he said. This might be a systemic effect or an effect within the intestinal tract. The eating of feces could provide a partial correction of the toxicity by altering the intestinal microflora through constant microbial reinoculation or providing a nutrient substance that reverses the toxicity. Dr. Barnes concludes that feces vary in their ratio of toxic to nutrient content, and the rat can choose nutrient feces only at the moment of excretion.

"It is quite likely that when an explanation for the other phenomena is found, it will apply" to the antibiotic improvement of unheated soybeans and its abolishment when coprophagy is prevented, said Dr. Barnes. If these various observations are interrelated, the common denominator must be found in the alteration of processes of destruction or synthesis caused by microbial fermentations within the intestines, he added.

SOYBEAN PRODUCTS FOR LACTATING COWS—Data were presented by Dr. J. K. Loosli of the host school to show that solvent extracted soybean oil meal is approximately equal to corn distillers dried grains with solubles and superior to linseed oil meal as the only high protein supplement for lactating cows.

A heat processed whole soybean product, containing all the oil, increased milk yield and depressed the fat content of the milk in comparison with soybean oil meal and corn distillers dried grains, said Dr. Loosli.

Some work showed that the rumen fermentation was modified by the heat processing. From the present studies, Dr. Loosli said, it is not clear what possible importance might be attributed to the high fat content of the cooked soybeans, or whether heating favorably altered the protein content of the cooked soybeans. Digestion studies with steers showed the cooked soybeans had a TDN (total digestible nutrient) value of 100 compared with Morrison's value of 87 for raw soybeans.

The results of an experiment with soybran flakes showed that soybran flakes, as 30% of the concentrate mixture for milking cows, proved equal to oats or citrus pulp for both milk yield and weight gain of the cows. From the digestion experiments and the observations of dairymen, said Dr. Loosli, these results would be anticipated. The fiber in soybran flakes was 84% digestible by steers and the TDN value of the feed was 72%.

RUMINANTS

(Continued from page 19)

tose, cannot utilize starch to any great extent and cannot digest sucrose when these carbohydrates bypass the fermentation area (rumen and reticulum).

The scientists pointed out that as age increases, the ability to use maltose improves and the same apparently is true for starch. "Sucrose, however," they noted, "is not hydrolyzed, except possibly by microorganisms, because of the absence of sucrase in the digestive secretions. These are not serious problems in the ruminating animals, since very little hexose polysaccharide escapes rumen fermentation."

The role of saliva in the digestive processes of the bovine is not fully understood, they noted. However, rate of secretion of saliva is markedly affected by diet. Although the conditions required for rapid and optimum rumen development and absorption therefrom are not yet clearly delineated, the importance of diet is evident, the scientists said.

POULTRY

(Continued from page 18)

anti-trypsin. Rather than a lipase inhibitor, perhaps the effects observed are due to over-secretion of lipase by the overactive pancrease of chicks receiving raw soybean oil meal. The excess lipase may hydrolyze the soybean oil beyond the point where the best emulsification mixture for fat absorption is produced. Fatty acids are not as well absorbed as intact fats in the young chick. The effect of dietary trypsin on fat absorbability might then be to depress the excess pancreatic secretion caused by the trypsin inhibitor. This hypothesis of course has not been subjected to experimental proof.

"Aside from the effect of fat digestibility, trypsin did not affect the

One bag broke . . . the other has two-way stretch

The one with stretch is made of H&W's new, high-strength Expanda Kraft.

A large tractor-trailer ran over both bags of equal weight and plies. The regular kraft bag burst under pressure—see the tell-tale flour on the inside tire tread. But look at Expanda Kraft —*not a sign of breakage!*

Expanda Kraft is stronger, because it's made by a special roll-crepe process. It's resilient, has two-way stretch, and soaks up shock. And Expanda Kraft is available in white, semi-bleached and natural.

Expanda Kraft comes in 40, 50, 60, 70, 80 and 100-pound basis weights. *For samples and information*, write Hollingsworth & Whitney, Division of Scott Paper Company, Chester, Pa.

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When a hog raiser has a scours problem...

WHAT DO YOU RECOMMEND?

Read how these men stopped the hog scours problem with nf-180

"... nf-180 is the product..."

"We've never found anything like nf-180"

"nf-180 worked for us"

Roy Harrold, Beach City, Ohio, maintains 160 sows in his specially designed farrowing barn. At one time he had a tough scouring problem.

"My pigs started scouring at about 2 to 3 weeks . . . and then others began to get the problem younger and younger. It even went right down through the sows, and one sow gave it to another."

How Roy Harrold stopped his problem

"I got to talking with our feed man about the idea of protecting the pigs by treating the sows, and he said he'd see what Hess & Clark had on the idea. Hess & Clark suggested nf-180 . . . so he brought some down and we tried it. As far as I'm concerned, treating the sow with nf-180 is *the way* to prevent baby pig scours. It stopped my pigs from scouring completely."

The advice of his feed dealer and nf-180 helped Roy Harrold solve his scours problems. By following a policy of "first help the customer... then he'll help you," Mr. Harrold's feed dealer earned a steady customer and a friend.

Harl Thompson, Sesser, Ill., is another hog raiser who has had remarkable success preventing baby pig scours *by treating the sow* with nf-180. Before using nf-180 Mr. Thompson's problem was so serious that, "... if we saved 7 out of 11 or 12 pigs farrowed, we were fortunate."

How Harl Thompson stopped his problem

"We took pigs to a state laboratory. They ran cultures on the bacteria in the pigs and the tests showed that nf-180 was the product to use. We feed nf-180 a week before and two weeks after farrowing. Out of seven litters we first put on nf-180, we lost only one pig.

"We have never found anything like nf-180. This is the simplest program you can possibly devise. There is nothing we have found that will do the job as well as nf-180."

When a hog raiser comes to you with a scours problem, tell him about the success Harl Thompson had with nf-180. Explain the nf-180 feeding plan. He'll be satisfied with the program and satisfied with your service.

NT-6-6

Wilbur Siebrase, Waveland, Ind., tells of his success with nf-180 in stopping his scours problem. "Everything was going fine with my hogs until August, 1957, when the roof fell in. First a group of boars started scouring... then a group of gilts... then two sows in the farrowing barn. When the sows started scouring, their baby pigs also began scouring. Out of 78 litters, we lost over 200 pigs."

How Wilbur Siebrase stopped his problem

"We were told about nf-180 by our feed dealer. We tested it by feeding nf-180 to the sows before and after farrowing. We produced 188 live pigs out of 202. For the first time in months there was no sign of scouring. nf-180 worked well for us. In fact, it was the difference between our staying in the hog business or having to sell out."

Learn more about how you can get new customers and sell more feed with the help of nf-180. It's simple. Just add nf-180 to provide 150 grams furazolidone per ton in your regular sow ration. Feed it one week before and two weeks after farrowing. For complete information and research data on the nf-180 program write to

HESS & CLARK Division of Vick Chemical Company ASHLAND, OHIO

nf-180® brand of furazolidone

metabolizable energy of the diet. If one can assume that the endogenous trypsin neutralized the trypsin inhibitor present in the raw meal in the digestive tract of the chick, it would appear that the trypsin inhibitor is not important in effecting the digestibility of the protein of raw soybean oil meal by the chick."

PROTEIN REQUIREMENTS OF LAYING HENS—"Efficiency of feed utilization for egg production is improved by increasing the energy content of laying rations only when the protein levels in the diets are adequate to support maximum egg production," according to Dr. M. L. Scott, department of poultry husbandry, Cornell University. He comments that hens "tend to over-eat low protein diets in an effort to obtain the protein needed for egg production."

The study further showed, "For egg production rates in the range of 75-80% under the usual conditions of practical layer feeding, using diets composed chiefly of corn and soybean oil meal, the hen must take in approximately 18 gm. of feed protein per day. Since the hen makes use of only about 10 gm. of protein for egg production and body tissue maintenance, a considerable wastage of protein occurs during digestion and metabolism of feed proteins.

"Since it appears that a large portion of this wastage occurs in the process of concentrating essential amino acids for deposition in the egg, it should be possible to lower the dietary protein requirement markedly, by balancing the dietary amino acid levels in such a way that the total feed protein can be more efficiently converted to egg protein. In relation to egg proteins, feed proteins (corn-soy) are deficient in lysine, isoleucine, valine and methionine. The sulfur amino acids are most markedly deficient, indicating these to be the most limiting factors in preventing more efficient utilization of protein by the laying hen."

Rutgers University Discloses Program for Poultry Industry Day

NEW BRUNSWICK, N.J. — The program for the Rutgers Poultry Industry Day Nov. 16 has been announced by the university's department of poultry science. Registration begins at 9 a.m. in Blake Hall with the program starting at 9:50.

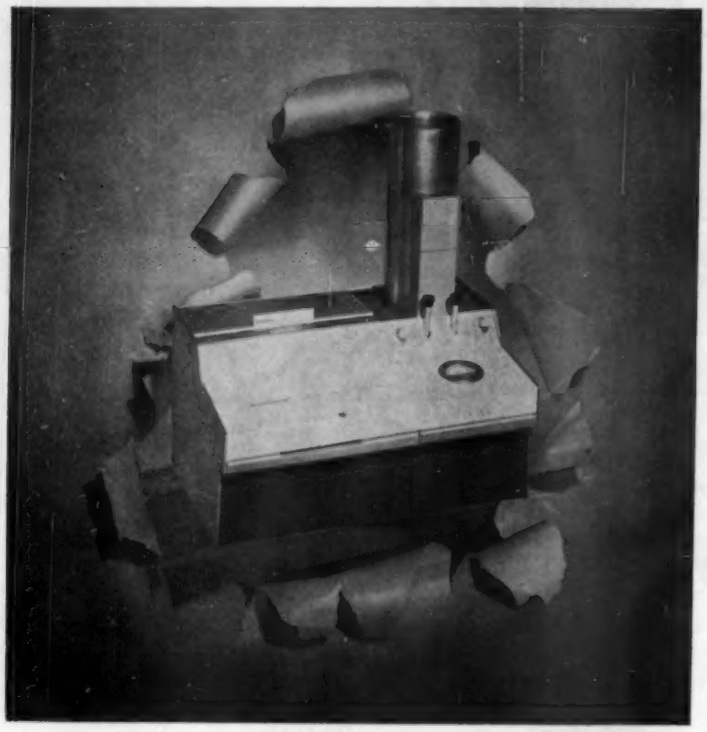
The morning session will include the following talks: "Utilization of Soybeans by Poultry," Dr. Hans Fisher, associate professor, poultry nutrition; "How Much Feed Do Chickens Waste in the Drinking Water?" Dr. Harold S. Weiss, associate professor, poultry physiology; "A New Look at the Calcium Requirement for Egg Production," Dr. Paul Grininger, assistant professor poultry nutrition, and "Coccidiosis—Still a Problem," Dr. David C. Tudor, assistant research specialist, poultry pathology.

"It's growing mash, sir. What did you think a chicken had for dinner?"

Opening the afternoon program will be the showing of a Rutgers University extension service film, "The Egg Story."

Afternoon talks will include: "What's Wrong, Doc?" (poultry diagnostic problems), Charles B. Hudson, associate research specialist, poultry pathology; "Engineering Aspects of Low-Cost Poultry Housing," Charles H. Reed, associate professor, agricultural engineering; "Performance Aspects of Low-Cost Poultry Housing," Dr. Robert L. Squibb, professor, poultry science, and "Observations on British Agricultural Research," Dr. Paul D. Sturkie, professor, poultry physiology, recently returned from a year's leave of absence at the Poultry Research Centre, Edinburgh, Scotland.

Exhibits planned for Collins Auditorium in Blake Hall, where the sessions will be held, include: "Structure of the Chicken Kidney," "Measuring Egg Quality," "Serum Neutralization Test for Detection of Bronchitis," "Effect of Disease on Electrophoretic Separation of Serum Proteins" and "Investigation of the Chicken's Circulatory System: Cardiac Output."



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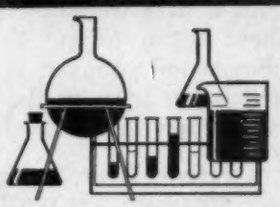

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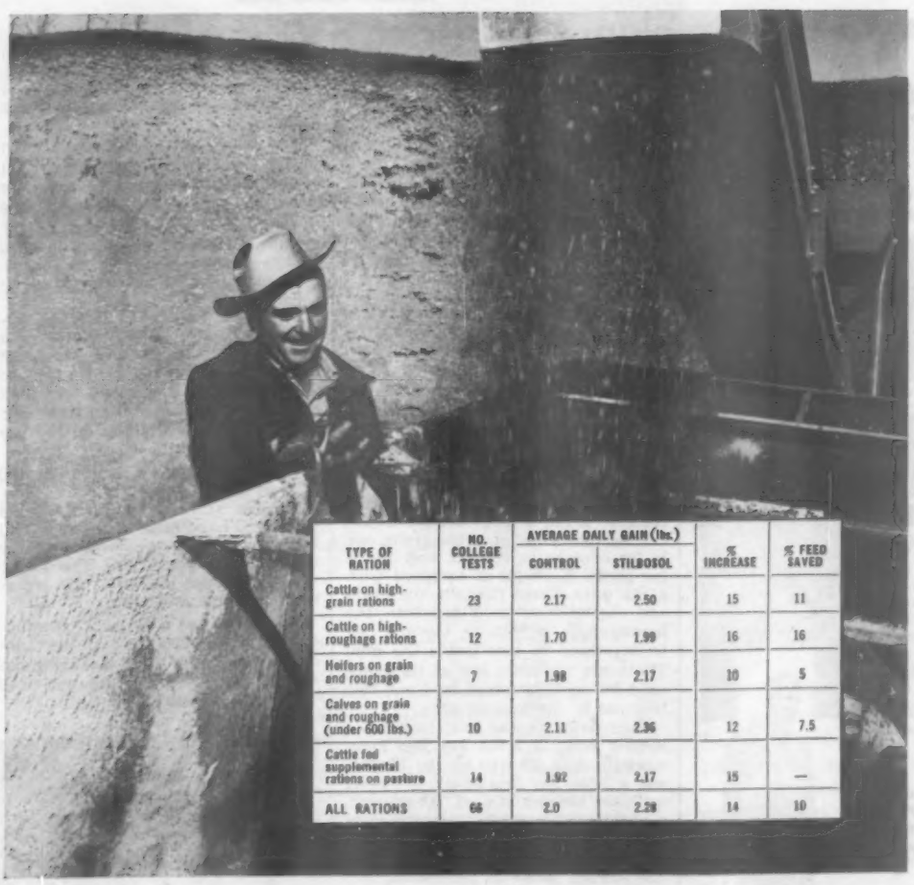
66 college tests prove value of Stilbosol in all types of rations. Result: 14% increased gain, 10% feed saved.

Stilbosol makes any type of ration do more



TYPE OF RATION	NO. COLLEGE TESTS	AVERAGE DAILY GAIN (lbs.)		% INCREASE	% FEED SAVED
		CONTROL	STILBOSOL		
Cattle on high-grain rations	23	2.17	2.50	15	11
Cattle on high-roughage rations	12	1.70	1.99	16	16
Heifers on grain and roughage	7	1.98	2.17	10	5
Calves on grain and roughage (under 600 lbs.)	10	2.11	2.36	12	7.5
Cattle fed supplemental rations on pasture	14	1.92	2.17	15	—
ALL RATIONS	66	2.0	2.28	14	10

Feed corn, corn-citrus, or corn silage; cottonseed hulls or milo; sorghum silage or sorgo silage. The plain and simple truth is: *Any type of basic ration when supplemented by Stilbosol-fortified protein helps cattle put on more weight at less cost.*

Stilbosol, however, does not allow you to cut back on the amount of supplement fed. Stilbosol is a gain booster and not a substitute for feed. Cattlemen must still feed a *balanced* ration to obtain top results.

What does Stilbosol mean to the average cattleman in dollars and cents? At a recent American Society of Animal Production meeting, it was reported that Stilbosol is worth an extra $7 per head to feeders. Multiply the number of cattle *you* feed in a year by this $7 and you can easily see that Stilbosol is worth quite a chunk of money.

See your feed manufacturer for supplements fortified with Stilbosol . . . and pocket that extra $7 per head.

Stilbosol is Elanco Products Company's trademark for diethylstilbestrol premix which is manufactured and sold under exclusive license granted by Iowa State College Research Foundation, Inc., under its U. S. Patent No. 2751303.

After six years, Stilbosol (most thoroughly tested feed additive in the world) continues to give most feeders an extra 15% gain on 10% less feed.

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BLUE STREAK Prater TWIN-SPIRAL TWO-SPEED MIXER

7 SIZES
½ Ton—5 Ton—all over-size to handle full loads of even the lightest feeds.

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Cut-away view of America's first and only Twin-Spiral Two-Speed Mixer—doubles your capacity per horsepower!

NEW PLANT—This is an exterior view of the new Missouri Farmers Assn. plant at Trenton, Mo. The warehouse and office are in the foreground here and the mill and elevator are in the back. The view shows the grain drier with its two elevator legs.

New Mill, Bulk Station Extend Firm's Trade Area

By Al P. Nelson
Feedstuffs Special Writer

More customers from a larger trade area are being served since the Missouri Farmers Assn. erected a new $180,000 elevator and feed mill at Trenton, Mo. The 45,000-bu. capacity elevator was opened in January and the feed mill in March.

At a grand opening held at the feed mill in March, two full-page newspaper ads told customers about the mill, its services and equipment. Hundreds of interested farmers came to see the new facilities, toured the mill and elevator and participated in attendance and prize drawings. The feed mill management offered free grinding of 1,000 lb. of grain on opening day to any farmer using MFA concentrates in his order.

"We had a wonderful crowd and did a good grinding and mixing business on opening day," states Don Hyde, manager.

The new mill was constructed by Roberts Construction Co., Sabetha, Kansas. It has a large drive with receiving pits. One pit is for grain, one is for corn to be shelled, and one is for seeds. Each pit is equipped with a flip gate. From the pits the grain and ingredients go either into the hammermill or into an elevator leg to be stored in bins inside the mill. There are six bins; two of them are used for sacking mixed feed and two bins are in the loadout area.

Equipment in the mill includes a Bender hoist, a 2-ton Jay Bee hammermill, with 25 h.p. on the blower, and a 2-ton Jay Bee mixer. A Prater molasses blender is used. At present, concentrate for mixing is received in bags. However, a new bulk station is being built on the premises. One of the storage tanks in the station will be used for storing concentrate in bulk.

Bulk Station

This station has four Columbian 20-ton capacity storage tanks and is equipped with a Simlo elevator leg and auger. A 6-ton Bulkanizer truck is used for bulk deliveries.

An Aeroglide grain drier with a capacity of 500 bu. per hour plays an important part in the new mill and elevator operation. It has two elevator legs (1,000 bu. per hour), one 75 ft. and a 50 ft. leg. One leg takes wet grain into elevator; the other takes dry grain back into storage. Incoming grain for immediate grinding or for storage is weighed on a 50 ton capacity Toledo scale. Grain which goes into the grain bank is dried. The charge is 2¢ per point. There is also an in and out charge of 3¢ per bushel.

The plant has a Triumph corn sheller. Mr. Hyde says a great deal of corn is shelled here. The cobs are blown through a 300 ft. metal pipe to a metal cob house far back on the premises. Farmers can load up with all the cobs they wish at no charge. Overstock of cobs is burned periodically.

"We do a large seed cleaning volume," says Mr. Hyde. "We have a Clipper seed cleaner and two large bins, each holding 280 bu. We use one bin for holding uncleaned seed and the other is used for clean seed. Our charge on seed cleaning is 10¢ per bushel."

The company has a large 40 by 160 ft. warehouse in the new plant. Here feeds are stacked by use of hand truck and hand labor. The mixer and the seed cleaner are located at the far end of the warehouse. There is no wall separation between the warehouse and the mill area.

The plant has a 40 by 20 ft. office and farm supplies store at the front of the warehouse area. Mr. Hyde has several farm store island and wall

(Turn to NEW MILL, page 79)

COB HOUSE—This metal cob house is located several hundred feet behind the new Missouri Farmers Assn. mill.

660 Genetic Crosses...

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Complete Layer

Layers are like men. You have often despaired of hiring the COMPLETE man . . . *who can do everything well* . . . as you must . . . to make the best possible living. Your egg business requires more than high record layers. Many expensive layers have high random sample test records but they hurt your trade with low interior egg quality . . . or other profit-cutting weaknesses. Colonial has always rejected breeding systems offering no more than high egg numbers. In 1960 alone, the best TRUE-LINES layers . . . *strong in every profit trait* . . . the COMPLETE layer . . . emerged from 660 combinations of layer lines in 2-, 3-and 4-way crosses. IBM-computer programmed by Colonial geneticists (see photo); then proved under *your* operating conditions . . . cage or layer . . . on Colonial evaluation farms scattered across the U. S.

COLONIAL TRUE LINES®

"Are our choice after trying the others"
WALDREP POULTRY FARMS

"In the past 2½ years, we have used 15,000 TRUE-LINES and are adding 3,000 more. We have other nationally sold layers. TRUE-LINES *livability* has been much better . . . *production* higher . . . *large eggs* early . . . *interior quality* excellent . . . *staying power* very satisfactory. TRUE-LINES are our choice after trying the others."

Investigate TRUE-LINES

Write for address of TRUE-LINES ASSOCIATE HATCHERY nearest you . . . and savings up to $150 per 1,000 pullets.

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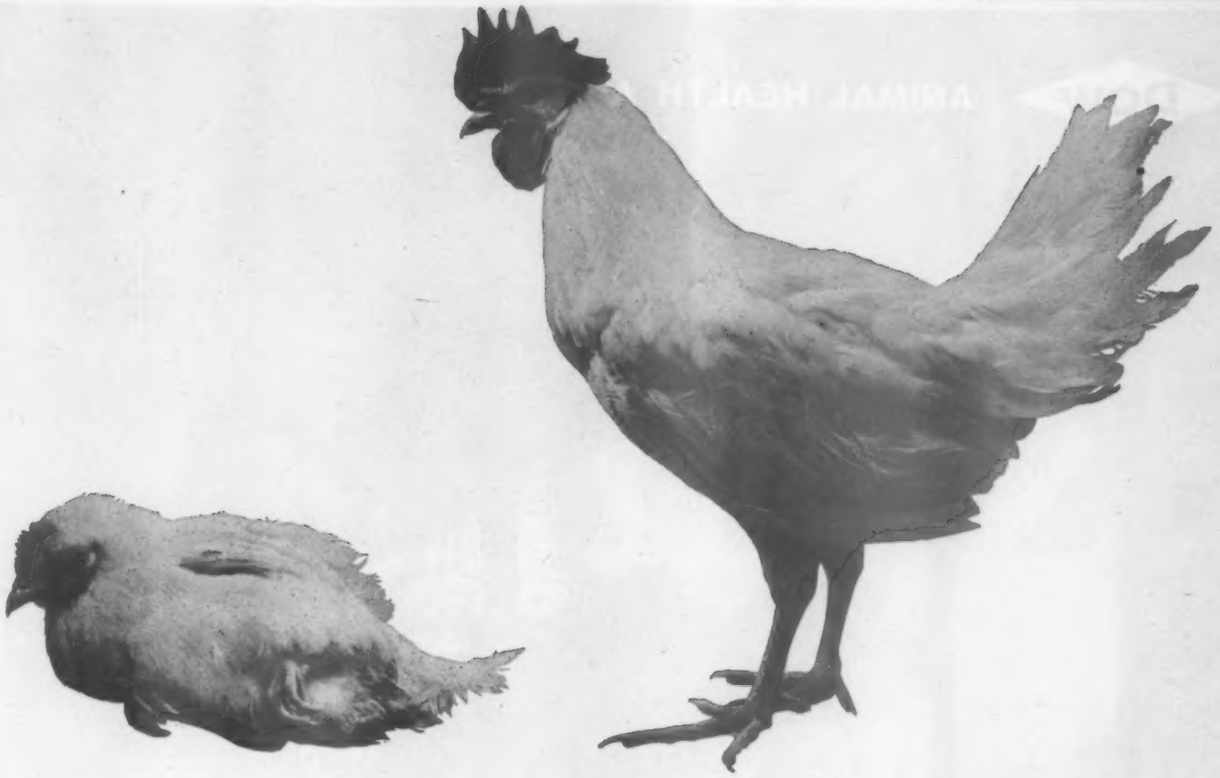
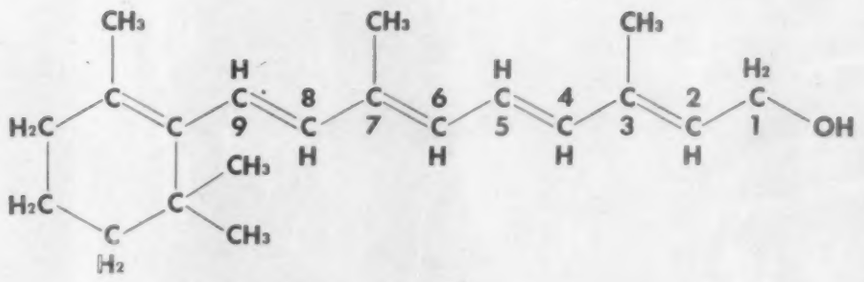


Vitamin A should zigzag properly...



This is the all-*trans* isomer used in *PGB-250 Dry Vitamin A*. Any difference in this configuration would affect the potency of the vitamin A. The following table bears this out.

Stereoisomeric Form	Relative Biological Potency Vitamin A
all-*trans*	100%
2-mono-cis (neo)	75%
6-mono-cis	23%
2,6-di-cis	23%

If this sounds complicated, it is. And the procedures for making bioassays are even more so. Which may help explain some of the confusion that exists about whose vitamin A has the most dependable *biological* potency . . . something quite different from *chemical* potency. And infinitely more important to the birds that will ingest it.

Mixtures of vitamin A isomers have less biological potency per unit of chemical potency than all-*trans*-vitamin A. And unstable forms can be destroyed *before* feeding if they are mixed in the diet. Losses due to instability may be misinterpreted to mean poor availability. Finally, the coating material can affect availability.

Because of these variables, DPi has used the all-*trans*-vitamin A as a standard in measuring the biological availability of *PGB-250 Dry Vitamin A*.

When compared with the stable Vitamin A Reference Standard recently proposed by the Animal Nutrition Research Council, *PGB-250 Dry Vitamin A* has been proved stable and fully available biologically.

We'll be glad to send you a booklet which elaborates on these tests and on the other factors which make *PGB-250 Dry Vitamin A* your best possible value. Write for it. ***Distillation Products Industries,*** Rochester 3, N. Y. Sales offices: New York and Chicago • Charles Albert Smith Limited, Montreal and Toronto.

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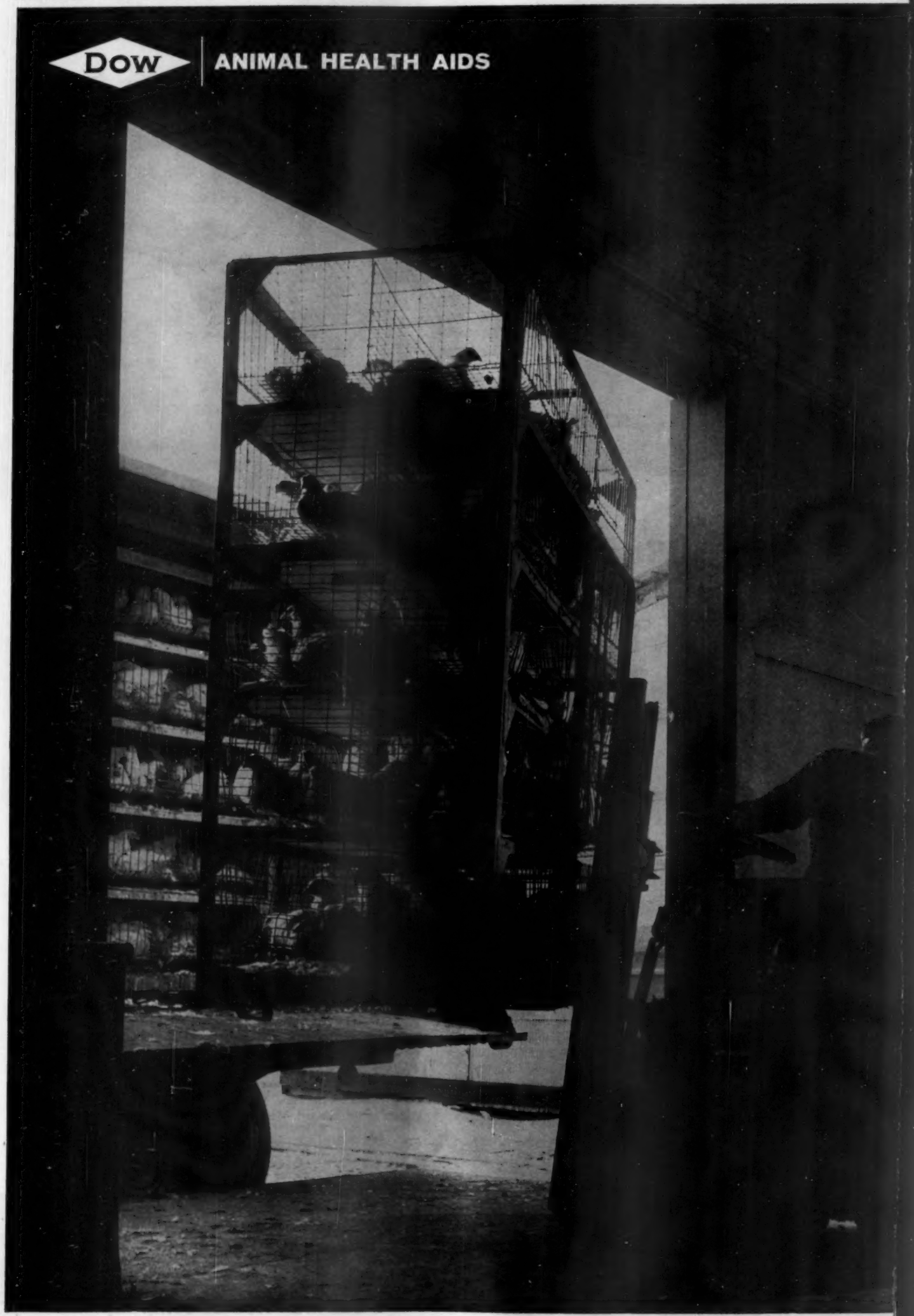

ZOAMIX®

gives growers approved coccidiosis control right up to market time!

New development in coccidiostats requires no withdrawal period . . . won't harm layers or farm animals, if accidentally eaten . . . provides the best protection against all types of coccidiosis!

Zoamix containing Zoalene added to your feed formula gives broilers better protection against coccidiosis, allows greater feed efficiency, allows faster weight gains, *plus* an extra margin of safety available in no other coccidiostat!

Zoamix has been approved for feeding to broilers right up to the time they are shipped to the market! That means no withdrawal period, no need to switch to a new feed formula prior to shipment, and the grower can act fast to market his birds at the most profitable time.

Zoamix will not injure laying hens and other farm animals if accidentally fed to them. It's safe to mix with any chick starter or broiler mix without affecting the ingredients, nutrients, or other additives in the formula. It's safe for mill workers or growers to handle.

And best of all, Zoamix is unexcelled as a coccidiostat. In fact, feed manufacturer's research laboratory tests show Zoamix is superior to eight of nine leading coccidiostats . . . and equally as effective as the other one—yet superior to that one in feed conversion and rate of gain, as shown in the following table:

RATE OF GAIN

AND FEED CONVERSION COMPARISONS

Zoalene Compared with Following Coccidiostats		A	B	C	D	E	F	Totals
Number of Comparative Tests		29	15	16	23	5	6	94
NUMBER OF TESTS IN WHICH	Zoalene Superior for Weight Gains	28	14	16	14	5	6	83
	Other Coccidiostat Superior for Weight Gains	1	1	0	8	0	0	10
	No Difference in Weight Gains	0	0	0	1	0	0	1
	Zoalene Superior for Feed Conversion	26	10	14	15	2	6	73
	Other Coccidiostat Superior for Feed Conversion	1	2	2	7	2	0	14
	No Difference in Feed Conversion	2	3	0	1	1	0	7

Zoamix is available now in commercial quantities at centrally located points throughout the country. Write Dow for assistance in labeling, or for technical help. The address: THE DOW CHEMICAL COMPANY, Agricultural Chemicals Sales Department, Midland, Michigan.

See "The Dow Hour of Great Mysteries" on TV.

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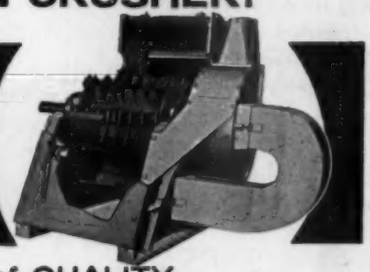
W-W HAMMERMILLS GRIND WITHOUT PRE-CRUSHING



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They have heat-treated hammers, hard-surfaced with Tungston Carbide to always maintain a cutting edge. Quality construction — with cast iron frame assures you of a long, trouble-free service.

You get more for your money — all the way through. Here are representative prices:*

MODEL	HORSEPOWER	FEED OPENING	PRICE*
F-25M Goosenеck	40	18"	$ 697.04
F-27M Goosenеck	75	24"	$1665.86
F-29M Goosenеck	100-150	36"	$2183.98

Other Models from $154.00 to $408.16. All prices f. o. b. factory.
A convenient time-payment plan is available. Write for complete information.

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Convention Calendar

Nov. 9-12 — National Renderers Assn.; Statler-Hilton Hotel, Dallas, Texas; sec., Miss Jamie Fox, 30 N. LaSalle St., Chicago, Ill.

Nov. 14-15 — Washington Animal Industry Conference; Skagit Valley College, Mount Vernon, Wash.; John G. Wilson, mgr., Washington State Feed Assn., 814 Second Ave. Bldg., Seattle 4.

Nov. 15—All-Iowa Sheep Day; Memorial Union, Iowa State University, Ames; T. W. Wickersham, Ext. Animal Husbandman, Curtiss Hall.

Nov. 15-16—North Carolina Egg Industry Conference; North Carolina State College, Raleigh; College Extension Division, Box 5125, State College Station, Raleigh.

Nov. 16—Poultry Industry Day; Blake Hall, College of Agriculture, Rutgers University, New Brunswick, N.J.; chm., Dr. R. L. Squibb, Poultry Science Dept.

Nov. 16-17—Missouri Poultry Improvement Assn.; Hotel Continental, Kansas City; sec., E. M. Funk, Columbia, Mo.

Nov. 16-18 — Florida Nutrition Conference; University of Florida, Gainesville; chm., Dr. J. P. Feaster, Animal Husbandry and Nutrition Dept.

Nov. 17-18 — Liquid Feed Assn.; Aladdin Hotel, Kansas City; Jack von Mettenheim, Princeton, Ill.

Nov. 20-22—Western Grain & Feed Assn. of Iowa; Fort Des Moines Hotel, Des Moines, Iowa; sec., Bob Skinner, 401 Shops Bldg., Des Moines 9.

Nov. 25-26 — American Society of Animal Production; Hotel Sherman, Chicago, Ill.; sec., Clair E. Terrill, Animal Husbandry Research Division, Agricultural Research Center, Beltsville, Md.

Nov. 27-28—Tennessee Feed Manufacturers Assn.; Noel Hotel, Nashville; sec., Charles H. Warfield, American Trust Bldg., Nashville.

Nov. 29-Dec. 1—Business Management Conference; Kansas State University; sponsored by the Kansas Grain & Feed Dealers Assn.; sec., Orris E. Case, 609 Wiley Bldg., Hutchinson, Kansas.

Dec. 1-2 — North Carolina Animal Nutrition Conference; North Carolina State College, Raleigh; chm., Dr. J. W. Kelly, Poultry Science Dept.; co-sponsored by North Carolina Feed Manufacturers Assn., sec., McNair Evans, Box 44, Mocksville.

Dec. 2-3—Arkansas Turkey Federation Convention and Show; Hot Springs, Ark.; exec. director, John Haid, Box 1446, Little Rock.

Dec. 2-3—Western Quickie Convention; Disneyland Hotel, Anaheim, Cal.; Don M. Turnbull, sec., American Poultry & Hatchery Federation, 521 E. 63rd St., Kansas City 10, Mo.

Dec. 6-7—Cornell Poultry Servicemen's Clinic; Cornell University, Ithaca, N.Y.

Dec. 6-7 — North Dakota Turkey and Egg Convention; Fargo Civic Center Auditorium, Fargo, N.D.; sec., Irving J. Mork, Fargo.

Dec. 7 — Upper Peninsula Feed Dealers Assn.; State Office Bldg., Escanaba, Michigan; sec., J. O. MacInnis, Box 342, Sault Ste. Marie.

Dec. 7-8—Midwestern Quickie Convention; Conrad Hilton Hotel, Chicago; Don M. Turnbull, sec., American Poultry & Hatchery Federation, 521 E. 63rd St., Kansas City 10, Mo.

Dec. 8 — Arizona Grain and Seed Assn.: Westward Ho Hotel, Phoenix; sec., Willis F. Nielson, Box 787, Mesa, Ariz.

Dec. 8-9—Eastern Quickie Convention; Ben Franklin Hotel, Philadelphia; Don M. Turnbull, sec., Ameri-

New Listings

For the convenience of readers who scan the Convention Calendar regularly for new listings, those added to the column in the current week appear separately from ones which have been entered previously. The following week they will be moved to their proper slot where they will remain until the event is held.

1961

Jan. 13-14—Florida State Poultry Producers Assn.; Cherry Plaza Hotel, Orlando, Fla.

Oct. 23-25 — Centennial Nutrition Conference; Hotel Muehlebach, Kansas City 5, Mo.; sponsored by Midwest Feed Manufacturers Assn. and Land-Grant Colleges in Midwest's area; executive vice president, Lloyd S. Larson, 20 W. 9th St. Bldg., Kansas City 5, Mo.

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CALENDAR FOR 1960-61

NOVEMBER

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can Poultry & Hatchery Federation, 521 E. 63rd St., Kansas City 10, Mo.

Dec. 12-13 — Midwest Veterinary Nutrition Conference; Continental Hotel, Kansas City; Lloyd Larson, Midwest Feed Manufacturers Assn., 20 W. 9th St. Bldg., Kansas City 5, Mo.

Dec. 13-15 — Minnesota Poultry Hatchery Assn.; Hotel Radisson, Minneapolis, Minn.; sec., L. L. Baumgartner, Litchfield, Minn.

Dec. 15-16 — Business Clinic for Elevator Managers; Kellogg Center, Michigan State University, East Lansing; Carleton C. Dennis, Department of Agricultural Economics.

1961

Jan. 4-6—National Turkey Federation; Conrad Hilton Hotel, Chicago, Ill.; sec., M. C. Small, P.O. Box 69, Mt. Morris, Ill.

Jan. 12-13—Michigan Feed & Grain Dealers Assn.; Michigan State University, Kellogg Center; sec., Nevel Pearson, P.O. Box 472, East Lansing.

Jan. 15-17—Indiana Grain & Feed Dealers Assn.; Claypool Hotel, Indianapolis; sec., Fred K. Sale, 600 Board of Trade Bldg., Indianapolis 4.

Jan. 16-17—Northwest Retail Feed Assn.; Hotel Pick-Nicollet, Minneapolis; sec., W. D. Flemming, 112 Grain Exchange Bldg., Minneapolis, Minn.

Jan. 23-25—Farmers Grain Dealers Assn.; Civic Memorial Auditorium, Fargo, N.D.; sec., Lloyd C. Hanson, 513 Black Bldg., Fargo.

Jan. 23-25 — Southeastern Poultry & Egg Assn.; Municipal Auditorium, Atlanta, Ga.; sec., Harold E. Ford, 235 E. Ponce de Leon Ave., Decatur, Ga.; for reservations: Atlanta Convention Bureau, Rhodes-Haverty Bldg., Atlanta.

Jan. 27 — Missouri Turkey Day; University of Missouri, Columbia; E. M. Funk, sec., Missouri Poultry Improvement Assn., Poultry Bldg., Box 568, Columbia.

Jan. 31-Feb. 1—Illinois Agricultural Industries Forum; University of Illinois, Urbana; Department of Agricultural Economics, 305 Mumford Hall.

Jan. 31-Feb. 1 — Hoosier Turkey Trot; Purdue Memorial Union, Purdue University, Lafayette, Ind.; John N. Howell, Turkey Department, Indiana State Poultry Assn., Poultry Bldg., Purdue University.

Feb. 1-2—Illinois Nutrition Conference; University of Illinois, Urbana; chm., E. E. Hatfield, Department of Animal Science.

Feb. 2—Beef Cattle Study Day; University of Arkansas Agricultural Experiment Station, Fayetteville.

Feb. 2-3—Oregon Animal Nutrition Conference; Withycomb Hall, Oregon State College, Corvallis.

Feb. 3-4—Minnesota Turkey Growers Assn.; Leamington Hotel, Minneapolis; sec., Roy Munson, 2200 University Ave., St. Paul, Minn.

Feb. 6-7—Montana Nutrition Conference; Montana State College, Bozeman; chm., Dr. O. O. Thomas, Animal Industry and Range Management Dept.

Feb. 7-10 — American Dehydrators Assn.; Jung Hotel, New Orleans, La.; executive vice president, Joseph Chrisman, 430 Board of Trade Bldg., Kansas City 5, Mo.

Feb. 8-9—Pacific Northwest Feed Mill Production School; Hotel Leopold, Bellingham, Wash.; sponsored by Washington State Feed Assn.; mgr., John G. Wilson, 814 Second Ave. Bldg., Seattle 4.

Feb. 10 — Washington State Feed Assn., annual convention; Hotel Leopold, Bellingham, Wash.; mgr., John G. Wilson, 814 Second Ave. Bldg., Seattle 4.

Feb. 10-11—Poultry Fact Finding Conference; sponsored by Institute of American Poultry Industries; pres., Harold M. Williams, 59 E. Madison, Chicago 2.

Feb. 19-21—Midwest Feed Manufacturers Assn.; Hotel Muehlebach, Kansas City, Mo.; executive vice president, Lloyd S. Larson, 20 W. 9th St. Bldg., Kansas City 5, Mo.

Feb. 19-21 — Ohio Grain & Feed Dealers Assn.; Neil House, Columbus; sec., George G. Greenleaf, 5625 N. High St., P.O. Box 121, Worthington.

March 8 — Distillers Feed Conference; Sheraton Gibson Hotel, Cincinnati, Ohio; L. E. Carpenter, Execu-

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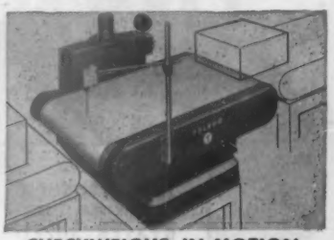

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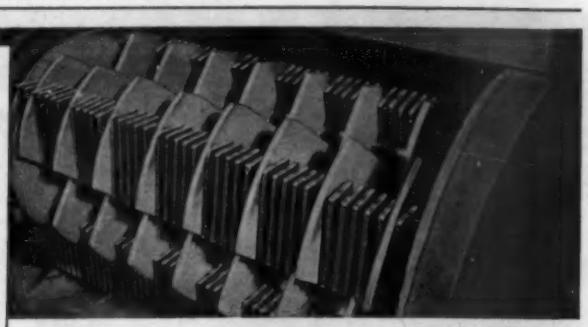

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tive Director, Distillers Feed Research Council, 1232 Enquirer Bldg., Cincinnati 2.

March 8-9 — Nebraska Grain & Feed Dealers Assn.; Sheraton-Fontenelle Hotel, Omaha; sec., Howard W. Elm, Trust Bldg., Lincoln, Neb.

March 9-10 — Oklahoma Nutrition Conference; Oklahoma State University, Stillwater; Dr. Rollin Thayer, Poultry Science Dept.

March 16-17—Oregon Feed & Seed Dealers Assn.; Sheraton - Portland Hotel, Portland; mgr., Russ Hays, 702 Lewis Bldg., Portland 4.

March 16-17 — Maryland Nutrition Conference; Shoreham Hotel, Washington, D.C.; chm., Dr. R. D. Creek, Poultry Husbandry Dept., University of Maryland, College Park.

March 20-24—Grain & Feed Dealers National Assn.; Washington D.C.; sec., Herbert L. Sharp, 400 Folger Bldg., Washington 5, D.C.

April 3-4 — National Institute of Animal Agriculture; Purdue University, Lafayette, Ind.; sec., Karl D. Butler, P.O. Box 521, First National Bank Bldg., Ithaca, N.Y.

April 9-13 — American Association of Cereal Chemists; Baker Hotel, Dallas, Texas; 1955 University Ave., St. Paul 4, Minn.

April 10-12—Poultry & Egg National Board; Sheraton Towers Hotel, Chicago, Ill.; mgr., Lloyd H. Geil, 8 S. Michigan Ave., Chicago 3.

April 20-22—California Hay, Grain & Feed Dealers Assn.; Jack Tar Hotel, San Francisco; sec., Leo L. Johnson, Blue Anchor Bldg., 1400 10th St., Sacramento 14.

April 27-29—Kansas Grain & Feed Dealers Assn.; Broadview Hotel, Wichita; sec., Orris E. Case, 609 Wiley Bldg., Hutchinson.

May 7-10—American Feed Manufacturers Assn. Convention and National Feed Show; Conrad Hilton Hotel, Chicago, Ill.; sec., W. T. Diamond, 53 West Jackson Blvd., Chicago 4.

June 8-11 — Canadian Feed Manufacturers Assn.; National Convention; Manoir Richelieu, Murray Bay, Quebec; national secretary, W. N. Hendrick, 2901 Bloor St. W., Toronto 18, Ont.; for registrations, T. G. Sevigny, Room 100, 355 McGill St., Montreal 1, Quebec.

July 18-20—American Poultry Congress & Exposition; Municipal Auditorium, Minneapolis; Don M. Turnbull, sec., American Poultry & Hatchery Federation, 521 E. 63rd St., Kansas city 10, Mo.

July 24-28 — Southeastern Egg Quality and Grading School; Auburn University, Auburn, Ala.; sec., Southeastern Poultry & Egg Assn., Harold E. Ford, 235 E. Ponce de Leon Ave., Decatur, Ga.

Aug. 24-26 — North Carolina Feed Manufacturers Assn.; Virginia Beach, N.C.; sec., McNair Evans, Box 44, Mocksville.

Sept. 19-21 — Marketing Seminar for Feed Manufacturers; Morrison Hotel, Chicago; Sales Executives Council, American Feed Manufacturers Assn., W. E. Glennon, president, 53 W. Jackson Blvd., Chicago.

Sept. 27-29—Pennsylvania Millers & Feed Dealers Assn.; Hotel Hershey, Hershey, Pa.; sec., D. W. Parke, P.O. Box 329, Ephrata, Pa.

1962

Aug. 13-18—12th World's Poultry Congress; Show Grounds of the New South Wales Royal Agricultural Society, Sydney, Australia; Dr. Cliff D. Carpenter, chairman, U.S. Participation Committee, 1207 Emerald Bay, Laguna Beach, Cal.; Dr. A. William Jasper, secretary, c/o AFBF, 2300 Merchandise Mart, Chicago 54, Ill.

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Average 63.7 lbs. more pay weight per head from pasture to feed lot to stock yards.

How the feeding trial was conducted. On May 6, 1958, twenty-four Hereford steers with an average starting weight of 550.5 lbs. were randomly allotted into two test groups of twelve steers each. The two groups were placed on adjoining pastures in Woodson County, Kansas.

The entire test ran continuously for 549 days under the supervision of Kansas State University, and covered four feeding periods: pasture, winter, pasture, and finishing.

Feed used during the trial was identical—except the 12 steers in one lot received a plain salt-bonemeal mixture while the steers in the other lot received a mixture of bonemeal and Morton T-M Salt.

The cattle were weighed off pasture on August 1, 1959. Gain was only 8 lbs. per head greater for the cattle fed Morton T-M Salt. However, after a 134 mile trip to the feed lot in Manhattan, both groups were again weighed individually off the truck and the T-M fed cattle averaged 21.7 lbs. more pay weight than the cattle fed plain salt!

The first week in the feed lot the T-M fed steers lost 5 lbs. less than the steers on plain salt. Both groups were put on a 90-day full-feed finishing ration of ground corn, prairie hay and 1 lb. of soybean meal per head daily (containing 10 mgs. of diethylstilbestrol.) After a three week starting period, corn and prairie hay were available at all times on a free choice basis. The one group of steers continued receiving the plain salt-bonemeal mixture and also plain salt, free choice, while the other group continued receiving the Morton T-M Salt-bonemeal mixture and also Morton T-M Salt, free choice.

At the end of the finishing period all cattle were again weighed. The T-M fed steers showed an additional average gain of 23 lbs. *more* than the cattle fed plain salt.

After a 125-mile truck trip to the Kansas City Stock Yards, the cattle were weighed once more and the steers on Morton T-M Salt averaged 11 lbs. per head *more pay weight* than the steers on plain salt!

The cost of feeding Morton T-M Salt, free choice, at the feed lot was 35¢ more per cwt. of gain, with the *total* increased feed cost per head $1.19. But the steers on Morton T-M Salt gained 23 lbs. more during this period than the steers on plain salt and then added another 11 lbs. in pay weight at Kansas City, an average *total gain* of 34 lbs. per head! Comparing the cost of gain with Morton T-M Salt and a conservative selling price per cwt... the feeder is getting back more than $7 for every $1 invested in Morton Trace-Mineralized Salt!

It all adds up to bigger profits for your customers when they feed Morton T-M instead of plain salt: the 8 lbs. gain on pasture—plus the extra 21.7 lbs. in pay weight from pasture to feed lot—and the additional 34 lbs. in favor of the Morton T-M fed cattle from the time they were in feed lot to the day they were weighed out at the stock yards! Customers want important dollar gain differences like these that come from the exclusive formulation of trace minerals and salt available only in Morton T-M Salt. So stock Morton T-M Salt. Order now from your Morton Salesman or write:

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Kansas State University Circular #378 carries a complete report of this feeding trial.

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FEED CUSTOMERS POINT TO SUCCESS WITH AUREOMYCIN IN STRESS FEEDS

Providing formula feeds containing high levels of Aureomycin to newly-arrived cattle prevents setbacks from stress of shipping, unloading, changes in weather

Stress feeding with high levels of AUREOMYCIN® for all newly-arrived cattle—that's the protective, money-making measure more and more farm feeders and feedlot operators are taking.

As a result, many feed manufacturers formulating these stress feeds are discovering a new and profitable source of income.

First few weeks critical

Those first two or three weeks following the arrival of cattle are critical. Shipping leads to stress. Unloading and sorting add new stress. Changes in surroundings or in weather—new feeds and feeding methods—add still more stress.

Stress often brings on shipping fever, bacterial diarrhea, foot rot, secondary bacterial infections, subclinical or invisible diseases.

Stop losses for your customers

Stress feeds with AUREOMYCIN help minimize losses from these diseases. Provide your customers with feeds that will give 350 milligrams of AUREOMYCIN per head per day—*to be fed until the critical period is past.* After that, cattle can be continued all the way to market on feeds that provide 70 milligrams of AUREOMYCIN per head per day.

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Mr. Maurice Vervaecke, of Omaha, Nebr.: "My herds gain close to 3 pounds per day, shipping fever is a thing of the past, and we've had almost no cases of foot rot. We buy calves in the 500 to 700-pound range and immediately place them on stress feeding of 500 milligrams of AUREOMYCIN per head per day for 20 to 30 days. The longer period means better protection against disease, we find. After the initial period, we drop the additive to 70 milligrams per head per day." Mr. Vervaecke, operator of 3 farms and 2 feedlots, last year sold 6000 head of cattle.

Mr. Henry Brandt, of Council Bluffs, Iowa: "The problems of raising all heifer stock, as we do, include higher incidence of disease. That's why AUREOMYCIN has become so important to us. Every newly-arrived animal (there are 3000 here now) goes on a stress feeding program that provides 500 milligrams of AUREOMYCIN daily for 20 days. Then the daily intake drops to 70 milligrams per head and stays at that until market time. With AUREOMYCIN, we've cut in half our losses to shipping fever and we've virtually eliminated foot rot."

JOE BROOKS

BY AL P. NELSON

A Little Psychology Helps

After a big chicken dinner at the Hotel Manitou, Joe Brooks and his staff of nine employees walked slowly down the street toward the Brooks Feed Mill. This was the evening of the monthly sales training meeting.

On that night, Joe always footed the bill for a dinner for all his employees. And they loved it.

The employees joked and laughed as they walked toward the mill, as men always do when they have a full stomach, when they feel complacent and when the world seems to be their oyster.

"I don't see how Joe can pick my brains at the meeting tonight," Milt said to Smiley. "I feel like going to sleep, not drumming up new sales and service ideas."

"Oh, you'll wake up," Smiley grinned. "Funny thing, even if a man's stomach is full, if he observes mental sparks flying around, his own mental gasoline will start exploding."

"I hadn't thought of it that way," Milt mused. "But I guess it's so. Like I don't feel like a date some nights, but when I hear my favorite redhead's voice on the phone, or see her, my brain seems to wake up and I'm raring to go."

"Yeah, you rare on your dates," growled Pop, "and then you're so pooped the next day you sleep on feed sacks every chance you get."

"Ssh!" grumbled Milt. "Don't keep bringing that up."

Once the men were seated in the warm salesroom on folding chairs, Joe came out of the office lugging a huge male manikin. The fellow had a determined jaw, square face and broad shoulders. He wore a tannish service suit, and when Joe set the fellow up in front of the employees, the guy was about four inches taller than Joe.

"Hey," said Butterball. "Who is he?"

Joe smiled and smoothed back a lock of brown hair. "He's an important fellow, Butterball, and we had better get to know him pretty well."

"He doesn't look like Khrushchev or even Floyd Patterson," observed Milt curiously.

Joe shook his head. "No, you know him much better than that. Just be patient."

Joe Gets Signs

He went into his office and came back with an armful of cardboard signs, several with cord attached. Joe laid the signs face down on a table, took one, and hung it around the burly manikin's neck. The copy read, "OUR COMPETITOR. He's after the same thing we're after. More Sales! More Customers!"

For a moment the employees stared at the big model. "Gee, Joe, who is it—Bill Monnett at the hatchery or Pete Grimm at the Roller Mill?"

"He is any man in the area who sells feed and related services," Joe said. "He's got lots of money invested in his hatchery, store or mill, and he wants to make a profit on that investment. He doesn't hate us, but he is determined to get his share of the available business."

The employees continued to stare at the model and to absorb the information Joe was giving them.

"This man," Joe went on seriously, "is not going to take defeat lying down. He's got too much at stake. He has ambition. He loves to work. That's American enterprise. He works his brain and body night and day. He puts in 70 hours or more a week thinking, planning, figuring, trying out new ideas—all to bring him a profit and wages to his employees."

Butterball sighed. "Then, Joe," he said with pale face, "business isn't a palsy walsy affair. There isn't enough business for everyone?"

Joe shook his head. "No, Butterball, if there was, everybody would be in business. Sales and profits belong to the strong, the willing and those who are ready to risk their money and back it up with brains."

"Holy cow!" asked Pop. "Will this guy—our competitor—drive us out of business?"

"He has a chance," Joe agreed. "It all depends on us—you and me. How hard are we willing to work? How open are our minds to new and improved ideas and methods? How willing are we to please our customers—

(Turn to JOE BROOKS, page 72)

Solid gains and money-making

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Linseed Meal

in your finishing rations

THERE'S A QUALITY DIFFERENCE

Help your customers put their livestock into the higher market grades with Minnesota Linseed Meal in your finishing rations. There are three definite advantages: it aids digestion to help keep animals on feed, it is high in protein to balance more pounds of grain, it produces a show-animal bloom to bring in the top dollar-per-pound at the market. For better business, use and recommend Minnesota Linseed Meal—dependable performance builds dependable profits!

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Permadry, the pioneer of stabilized, dry vitamin A supplements leads the way with all these values that build better feeds!

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Tests results at universities, experiment stations and independent laboratories show that Permadry's high biological availability produces consistently superior feed efficiency, growth response and egg production.

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The fat of the Permadry beadlet is, by nature, a barrier to moisture and resistant to the dissolved minerals.

HIGHEST VITAMIN A RETENTION DURING PELLETING

High temperatures during pelleting operations cannot destroy the Permadry beadlet's protective coating. It therefore also continues to protect the vitamin A after the pelleting operation.

HIGHEST AMOUNT OF A-ACTIVE MATERIAL

The entire beadlet is all vitamin A-active because the fat soluble vitamin A is dissolved throughout the fat, therefore providing the greatest amount of vitamin A-active material in your feeds.

MOST ECONOMICAL

The manufacture of Permadry has through the years been developed to a high state of efficiency and economy. These production savings are passed on to you. Added to this is the fact that the fat of the Permadry beadlet is itself a high energy nutrient.

FOR THE BEST BY TEST IT PAYS TO USE PERMADRY

PERMA-SOL† Water miscible vitamin A in powder form. Designed for those feeds where water dispersion and stability are desired.

PERMA-DUAL†† Whenever vitamin A has to be added to extremely destructive ingredients, use Perma-Dual. The newest development in vitamin A stability (double coated).

Other Fine Products In the Perma Family

PERMA-SOL MIX – Combination of water dispersible vitamins and antibiotics.

PERMA-D – Sealed-in vitamin D_2 and D_3.

PERMA-E – Sealed-in vitamin E.

ENERG-E – Most economical, stabilized, easily mixable fat with vitamin E. In beadlet form.

PERMA-MIX – Vitamin-antibiotic premixes, standard or custom made formulas *... and all other vitamins used in formula feeds.*

LESS FEED MORE MEAT

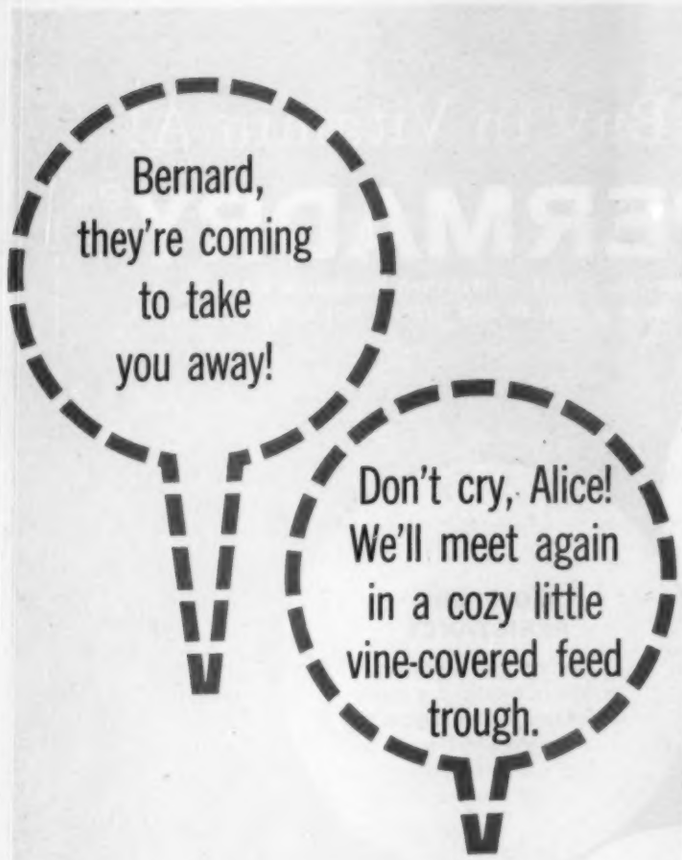
Stabilized Vitamins, Inc.

126-180 MONROE STREET, GARFIELD, NEW JERSEY
CABLE ADDRESS: PERMADRY • *Teletype:* PAS NO. 600

Telephone: PRescott 3-2800
In N.Y.C. Phone: OXford 5-2716

Immediate service from our strategically located distributing and manufacturing facilities.

*US Pat. No. 2,406,634 and others pending · †US Pats pending ††US Pat. No. 2,828,206 and others pending



Must have been love at first sight. Kent Feeds move too fast for second glances. That's why Kent dealers make more money . . . Kent Feed moves faster.

KENT FEEDS

THE FEED WITHOUT A FILLER

Muscatine, Iowa Sioux City, Iowa

How Feed Men Advertise—Part 4

Here's How Direct Mail Can Help Promote Feed Sales

By Al P. Nelson
Feedstuffs Special Writer

Last week this series considered newspaper advertising and cited some instances of how feed merchandisers use copy in newspapers to help them sell more of their products and services. Newspapers generally get the bulk of the average feed merchandiser's ad budget, but direct mail, billboards, radio and television, and giveaways also come in for their share of the feed man's advertising dollar.

Quite a number of feed men, from the small feed store owner to the feed manufacturer, use direct mail to get their sales story across to customers.

Insofar as the feed dealer and the custom miller are concerned, they are likely to have their own mimeograph machine on which they turn out many pieces of direct mail. One of these is the monthly mimeographed bulletin, consisting of one, two or more 8½ by 13 in. sheets (often colored stock) mimeographed on one side.

In such a bulletin feed merchandisers list prices and information about feed and services. One will find many customer feeding records quoted. News of farm meetings, happenings to farmers and even jokes also have their place in some of these bulletins.

As a rule it costs a dealer from 3¢ to 5¢ per copy, including postage, to issue such direct mail sheets, depending on the number of pages.

Wins New Customers

A sheet of this sort is sent to 2,000 farmers weekly by the Kauffman Feed Mill, Waterman, Ill. Carl Rylander, advertising-minded vice-president, is the editor of Ho-Ka Chat, the name of the paper. The publication is reported to be appreciated by farmers. Mr. Rylander says the bulletin helps his firm sell a great deal of feed and wins new customers. Farmers want to be informed of vital feeding facts today, he says, and his firm's Ho-Ka Chat aims to do just that.

Willis Sauder, Sauder's Feed Service, Tremont, Ill., issues a one page mimeographed bulletin once or twice a month depending upon the information he wants to get to his feeders. He says that in 1959 he distributed 18 issues of the bulletin to 1,350 farmers on each mailing. His cost runs about 5¢ per copy. He regards this bulletin as an excellent sales promotion for his firm.

The other type of direct mail is that which comes under the classification of postcards, larger mailing cards, folders, etc. Such direct mail is usually printed at an outside print shop, although some feed men can mimeograph them on their machines.

For example, Klemme Co-operative, Klemme, Iowa, uses a pink card stock about six by eight inches, and mimeographs a message on one side. This is often issued once or twice a month, especially during busy seasons, and it works out quite well in producing extra sales, says the management. The Preston Feed Mill, Preston, Iowa, issues a card about the same size, but Vernon Badrick, owner, likes yellow stock and he has the card printed.

"We get fine results from our printed cards," says Mr. Badrick. "Sometimes we mail them every two or three weeks, depending on the season, or when we have something special to sell."

Reprints of Ads

Many feed men get reprints of their best newspaper ads and mail them to customers. Some feed men also have a stack of these reprints on their order counters and farmers pick them up. Other reprints are posted around the salesroom and mill so that customers can't miss knowing what the ad specials are for the week.

E. T. Van Buren and Sons, Inc., Hobart, N.Y. (mentioned earlier under newspaper advertising), also uses its "VB News" title setup in its direct mail. When the firm uses direct mail, it does not publish newspaper advertising the same week. The management likes to alternate between newspaper ads and direct mail.

Fremont Feed and Supply, Fremont, Neb., finds that a two color, 6 by 8 in. jumbo post card is effective for a printed notice to some 1,000 customers. The card lists weekly prices on feeds and other products. It has proved highly effective in stimulating buying, the firm reports.

D. E. Horn and Co., Inc., York, Pa., likes to use case histories of specific feeding records in its newspaper advertising. Donald Horn, ad manager, orders reprints of the better ads of this type on calendered paper and uses them for mailing purposes and also for counter and billboard displays.

The firm, which also has a branch at Red Lion, Pa., makes Hornco feed and issues attractive four-page folders describing the feeds. One such folder had the interesting headline "What? Never touched by human hands?"

When Welp's Electronic Feed Mill, Bancroft, Iowa, was opened early in 1960, the firm issued a four page folder of welcome which contained information in detail about the new mill and its equipment, and also a sample IBM punch card.

Bumper Stickers

Nie Grain and Feed Co., Mechanicsville, Iowa, issues a 4 by 15 in. car and truck sticker done in black, white and bright orange. This sticker, distributed free to farmers, has this copy, "Mechanicsville, Iowa, Pork

EDITOR'S NOTE: *This is the fourth in a series of five articles on advertising by feed men. Information for the series was gained by Al Nelson in two years of interviews with feed manufacturers, custom mill operators, mobile mill operators and feed store owners. Several ideas on direct mail advertising are included in this article.*

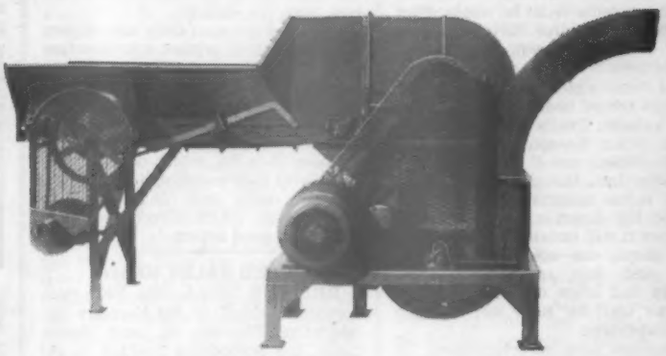
BULLETIN—Checking over back copies of Ho-Ka Chat bulletin, which he edits, is Carl Rylander, general manager, Kauffman Feed Mill, Waterman, Ill. This file of back copies is maintained in the firm's office so customers may consult them.

LOOK to A-D-M

. . . FOR THE FINEST IN FEED PROCESSING EQUIPMENT

Sired of the research, engineering, and actual field testing acquired through twenty years' service in the feed processing industry.

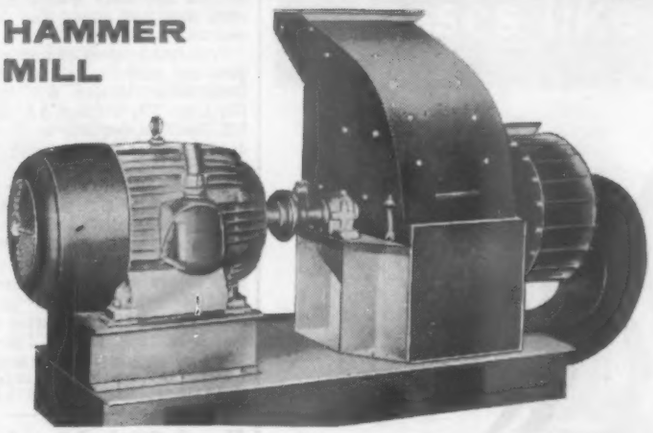
When producing this equipment, our engineers were given one instruction: "BUILD THE FINEST." We'll welcome an opportunity to prove in your own plant how well they succeeded.



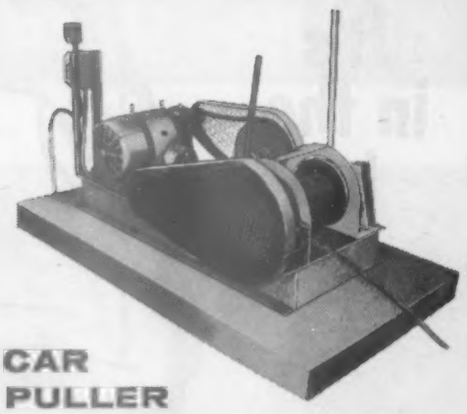
BALE SHREDDER

Rugged, versatile, highly efficient. Designed to permit wide latitude in installation location. Built for continuous operation at maximum capacity (5 to 10 tons per hour).

HAMMER MILL



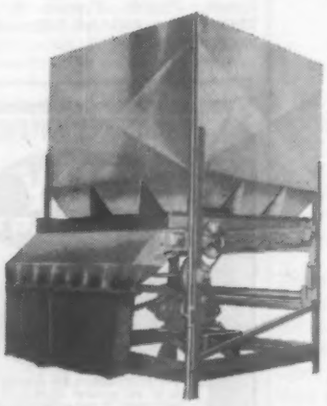
The hammermill that has earned the affectionate title: "A GRINDING FOOL." An extra deep 27" grinding chamber provides greater impact and assures maximum use of screen area.



CAR PULLER

Uses only 5 H.P. to handle 5 loaded freight cars. A real gem, transfers cars either direction—no troublesome capstans.

PELLET COOLER



A high-efficiency cooler of vertical design. Its low height simplifies installation in limited space. 10 to 14 tons per hour capacity.

Manufactured at

NEODESHA, KANSAS

"The Heart of America"

- Lower Manufacturing Costs
- Lower Shipping Costs
- Faster Factory Service

Other Experience-Proven A-D-M Equipment

- Collectors
- Reel Scalpers
- Bucket Elevators
- Electric & Manual Distributors
- Weigh Buggies
- Dehydrating Drums
- Bin Feeders—Live Bottom Bins
- Welded Steel Bins

Complete "TURNKEY INSTALLATIONS AVAILABLE." Tell us your needs. We'll welcome an opportunity to serve you.

Act Now
Don't Delay
More Profit

EQUIPMENT DIVISION

Archer-Daniels-Midland co.

210 WEST 10th STREET • KANSAS CITY, MISSOURI

Center of the World. Nie Grain and Feed Co."

The Jones County Farm Service, Anamosa, Iowa, likes the return postcard idea, so that the interested farmer can order what he wants. This is especially effective during the fertilizer ordering season, reports the management.

Feed firms which annually distribute farm record books to their customers include: Post's Feed Mill, Mt. Horeb, Wis.; Kasson Elevator Co., Kasson, Minn., and E. T. Van Buren and Sons, Inc., Hobart, N.Y.

The more color the feed dealer uses in his direct mail advertising, the more it will usually cost. In many print shops, one color is run at a time, and this means additional makeup and labor time. The quality of paper used for color work is also more expensive.

Numerous feed merchandisers, of course, obtain colorful, interesting direct mail pieces fom their suppliers. Usually, if the dealer gives his suppliers a list of his prospects and customers, the supplier will mail out these direct mail folders, imprinted with the dealer's name and share the cost with the dealer.

The feed merchandiser who knows an imaginative printer whose prices are reasonable, will often be able to work with such a man to produce outstanding direct mail advertising that will bring in more customers and increase sales. Remember, if you get between 5 to 8% return on your special direct mail merchandise bargains, you are doing well. That's close to the average which direct mail men agree is a good return.

FEED SALES HEAD

DICKENS, IOWA—Jim Patterson, former manager of the Farmers Cooperative Elevator at Linn Grove, Iowa, has accepted a position as assistant manager of the Dickens Cooperative Elevator.

Bemis Bag Transfers G. M. Robb to Illinois

ST. LOUIS—Gordon M. Robb, manager of the Bemis Bro. Bag Co. plant and sales division in Houston, Texas, will be transferred to the company's Peoria, Ill., plant and paper mill Nov. 1, T. H. Ashton, director of central operations, has announced.

Gordon M. Robb

On Jan. 31, 1961, when L. J. Finn retires after close to a half century of service with Bemis, Mr. Robb will take his place as manager of the Peoria plant and paper mill.

Mr. Robb joined Bemis 43 years ago as an office boy in Houston. While working during the day, he completed his secondary education at night school and continued on with special courses in accounting, traffic and business administration at LaSalle Extension University in Houston and later attended the institute for management at Northwestern University in Evanston, Ill.

After 10 years in various purchasing and accounting posts, Mr. Robb became a salesman in the Houston division. In 1943, he became sales manager and, in 1951, over-all manager of the Houston plant and sales division.

Monthly Molasses Imports, Exports Off

WASHINGTON—Imports and exports of industrial and feed molasses during August were down from July levels, it is reported by the U.S. Department of Agriculture. However, the year's cumulative imports are still far above those for 1959.

August imports totaled 44.5 million gallons, a decline of 5.3 million from July, but 19.7 million more than in August of a year earlier. Cumulative imports of molasses since Jan. 1 came to 338.9 million gallons, almost 60 million gallons more than were imported during the entire year of 1959 and 128.3 million more than were imported during the first eight months of 1959.

Principal sources of imports in August in millions of gallons were: Cuba, 27.2; Mexico, 6.7; Dominican Republic, 5.8; Turkey, 1.8, and Haiti, 1.2. Heaviest imports were to Philadelphia, New Orleans and Los Angeles.

Exports of industrial and feed molasses from the U.S. and its territories in August totaled .4 million gallons, a sharp drop from the 5.9 million in July, according to USDA figures. This brings total exports since Jan. 1 to 14.4 million gallons as against 13.2 million exported during the same period of 1959. Of the 1960 exports 12.3 million gallons came from Puerto Rico and the remainder from the U.S. mainland.

Feed Club Meeting

CINCINNATI—Two members of the Cincinnati Feed Club will discuss various aspects of the grain industry at a monthly dinner meeting of the club on Nov. 14 at Shuller's Wigwam Restaurant, it was announced by Harley Aylor, John F. Young Co., program chairman.

The speakers will be Ray Fledderman, Archer-Daniels-Midland Co., and Edward C. Cohan, Merrill Lynch, Pierce, Fenner & Smith. Their talks will be followed by a panel discussion.

Schenley's Corn Distillers Dry Grains with Solubles

are the most popular protein supplement and feed mix for dairy cows and cattle.* They include GFF, the Grain Fermentation Factor, and are always fairly and realistically priced. Write or wire today.

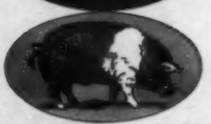
SCHENLEY DISTILLERS INC.

Feed & Grain Division
26 E. 6th St., Cincinnati 2, Ohio
Telephone: MAin 1-3170

Member of The Distillers Feed Research Council

WHY DOES ANYONE

BUY HOG FEED?



The only reason for buying feed is to get greater daily gains for less cost. If you offer this, you'll sell more hog feed.
There's a raft of scientific data pointing out the possibility of important advantages for swine producers by the use of Protamone thyroprotein in feed throughout the life cycle of swine.

1. Lactating Sows — to wean larger litters of heavier pigs.
2. Pig Starter — for greater feed efficiency.
3. Growing-Finishing — faster growth, improved feed efficiency and better market finish.

Drop us a note and we'll send you independent scientific documentation.

Agri-Tech, Inc.
4722 Broadway, K. C., Mo.

W. M. Dillard G. Neal Hill

Hess & Clark Names Two to Research Staff

ASHLAND, OHIO — Two appointments to the Hess & Clark, Inc., research staff have been announced by Dr. Paul D. Harwood, vice president and director of research.

William M. Dillard, D.V.M., has been appointed assistant director of field research and G. Neal Hill, D.V.M., has been named to the post of research veterinarian, according to Dr. Harwood.

Dr. Dillard will assist in planning and supervising research conducted at universities and state agricultural experiment stations. Prior to joining Hess & Clark he worked as a public health veterinarian. For six years, he was an associate professor at the school of veterinary medicine, Alabama Polytechnic Institute. He was also engaged in private practice for five years. Dr. Dillard is a graduate of the Southern School of Pharmacy and received his D.V.M. degree from Alabama Polytechnic Institute (Auburn) in 1948.

Dr. Hill will conduct large animal research at the Hess & Clark research center, Dr. Harwood said. He is a graduate of the University of Idaho and received his D.V.M. degree from the University of California. Prior to joining Hess & Clark he was a practitioner with the Owyhee Veterinarian Clinic, Homedale, Idaho.

Yieldmor Management And Disease Clinic Set

PIQUA, OHIO — Yieldmor Feeds, Inc., will hold its annual Broiler and Poultry Management and Disease Control Clinic Nov. 17 at the Elks Ballroom.

Bruce R. Davisson, executive secretary of the Ohio Poultry Assn., will open the program with a talk on "Promoting the Poultry Industry in Ohio," followed by Dr. Edward C. Naber, Ohio State University, talking on "Feeding and Management of the Breeding Flock." A broiler and poultry management clinic will take up the rest of the morning.

Prior to the disease control clinic in the afternoon, Dr. Harry E. Goldstein, veterinarian in charge of the Diagnostic Laboratory, Reynoldsburg, Ohio, will tell of the laboratory's services to the poultryman, and Prof. R. L. Kohls, Purdue University, will discuss the "Future for the Broiler and Egg Industry — What Does It Hold for Us?"

IMC Anticipates Earnings Increase

NEW YORK—Earnings of International Minerals & Chemical Corporation should increase "in excess of 5%" over the 1959-60 figure despite a first quarter loss, shareholders were told in their annual meeting.

T. M. Ware, IMC president, reporting a loss of $655,000, or 32¢ per share on the 2,366,670 common shares outstanding for the quarter ended Sept. 30, said that costs resulting from Hurricane Donna and a wildcat strike were largely responsible for the drop in earnings from $537,000 or 19¢ per share in the first quarter last year.

"Because of the seasonal nature of the fertilizer industry," Mr. Ware said, "profit margin is always lowest during the first quarter, even under normal conditions."

Mr. Ware said the outlook for increased earnings for the year was based on a "sound" sales situation, with demand equalling or exceeding productive capacity for three of the company's major products, triple superphosphate, phosphate rock and potash. Sales for the first quarter this year were $23 million, up $600,000 over the $22.4 million total for the same period a year ago.

The company currently is developing a potash project in Saskatchewan, Canada, and Mr. Ware said it was expected to be in production in fiscal 1961-62 and should make a "major contribution to corporate profits in 1962-63."

Two new directors were elected at the meeting. They are John M. Budinger, New York bank official, and John T. Ryan, Pittsburgh industrialist. They replace Byron B. Ralston, attorney-at-law and engineer, who retired under IMC's maximum age provision for directors, and Arthur R. Cahill, former IMC vice president.

Credit Chief Named By Moorman Mfg. Co.

QUINCY, ILL.—Announcement has been made by the Moorman Mfg. Co. that Frank D. Kreider has been promoted to credit manager.

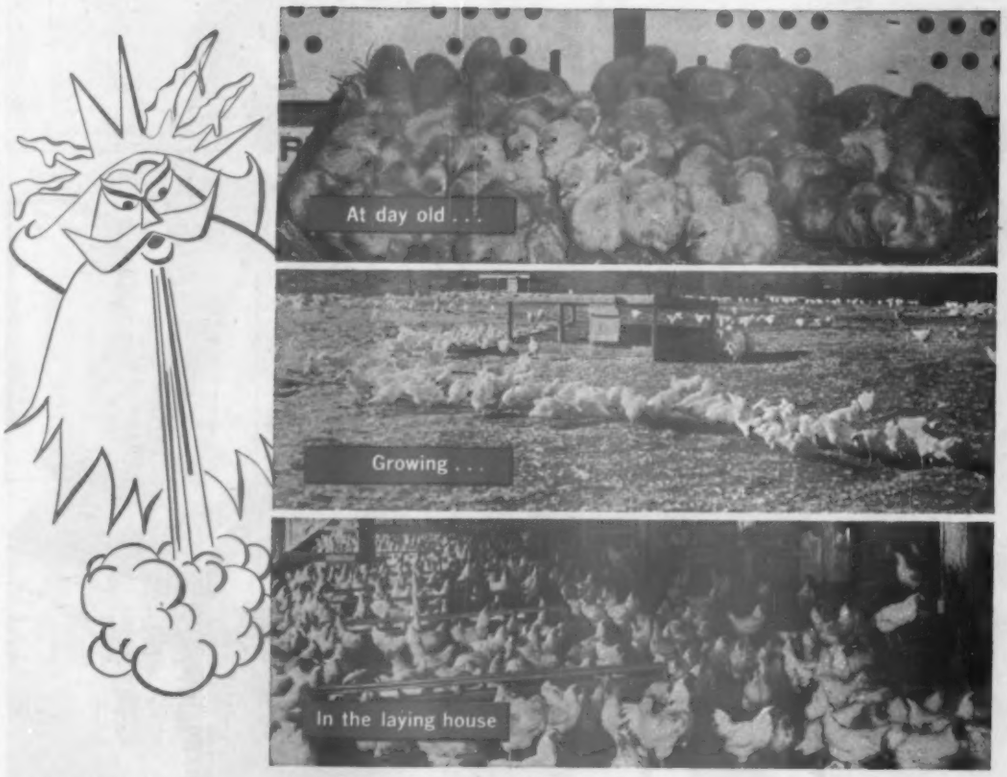
Mr. Kreider came to Moorman in June, 1936, as a credit correspondent. Later, he worked in the field personnel and sales training divisions and in the service department. More recently, he has been working in the market research department. Before joining Moorman's he taught school for 13 years in and around the Quincy area.

SOYBEAN PLANT OPENS

STUTTGART, ARK.—The Arkansas Grain Corp. has opened its new $2,100,000 soybean processing plant here. When it goes into full operation, it will process 8 million bushels of soybeans annually.

Mix Your Own Brand for More PROFITS!
BROWER
Whirlwind
FEED MIXER
Use BROWER MIXER to blend in a good concentrate with local grains and you're all set to sell your own brand of feeds — step up your profits as much as $1.50 per bag! A BROWER MIXER whirls the ingredients instead of just stirring or tumbling, produces the most thorough mix obtainable . . . a perfect blend in about 10 minutes. Built to give years of trouble-free service. WRITE FOR FREE CATALOG!
BROWER MFG. CO.
625 N. Third St.
Quincy, Illinois

Nothing protects you against losses like HYBRID VIGOR



From the day you put in your first flock of Arbor Acres 50's you can see the difference — not so much the color as the extra vigor in these new pullets. Even in long stretches of cold, wet weather . . . under any other conditions of unusual stress, "50's" live better than purebred pullets. You'll *know* it when housing time comes. One of the country's best-known integrated operators ran a split-flock test during the growing period: he housed 10% more "50's" than "controls"! And your "50's" will withstand stresses better in the laying house, too.

And the offspring! When mated with proven males, Arbor Acres 50's produce broiler chicks that grow and convert better than the Arbor Acres crosses which have set the industry standard for years. The fleshing and dressing characteristics of "50" crosses are already winning over well-known processors. Arbor Acres spent five years developing the "50" because we knew you couldn't afford to use any pullet but the best. Now it seems as if everybody wants to put in "50's" at the same time! Better call your Arbor Acres Division right away to be sure of the dates you want.

Breeding better birds Arbor Acres *for better business*

General offices, Research: GLASTONBURY, CONN.

Concord, N.C. • Springdale, Ark. • Blairsville, Ga. • Skowhegan, Me. • Carthage, Miss. • San Luis Obispo, Calif. • Albertville, Ala. • Thorntown, Ind. • Texasha, Tex. • Aprilia, Italy

Oregon Producers Form Egg Group

OREGON CITY, OREGON—Twenty-one egg producers in Clackamas County, Oregon, have organized a commercial egg producing group to be known as Clackamas County Egg Producers Assn.

At a recent meeting, the group accepted by-laws as submitted by a committee consisting of Henry Kyllo, Mars Manson and Chris Rebmann.

A nominating committee was also appointed. It includes H. B. Jeter, Mr. Kyllo and Mr. Rebmann. The committee is to report at a Nov. 1 meeting, at which time officers for 1961 will be elected.

Two egg producers were elected to represent the association on the Oregon Egg Council. They are Gerald Sporalsky and Mr. Rebmann. They will attend annual meetings of the council, at which they will present resolutions from the Clackamas group and report back on activities of the state-wide organization.

Discussion was held on the assessed valuation of laying hens in commercial flocks. The group decided that the tax imposed on laying hens "is unfair, due to recovery value of the hens." Therefore, it was decided that a letter be sent to the Clackamas County assessor requesting that he consider the matter of re-evaluating layer flocks in the county.

It was brought out that Clackamas County is the largest poultry-producing area in the state. It leads both in laying hen and broiler turkey production. At present, the laying hen flock in the state consists of some 530,000 hens. In addition, there are approximately 2½ million broilers and a turkey population of approximately 350,000. The egg production phase of the poultry business is the largest, income-wise, of the nearly $6 million received annually as the result of the sale of these products.

Flo-Tronics Creates Sales Engineer Post

MINNEAPOLIS—Thomas A. Burton, former project engineer for Union Carbide Chemical Corp., has been appointed process industry sales engineer for Flo-Tronics, Inc., here, it was announced by William P. Edmunds, president.

Thomas A. Burton

In this newly created position Mr. Burton will be responsible for the sale and design of Flo-Tronics' conveying systems and controls in the chemical and other processing industries.

While with Union Carbide at South Charleston, W.Va., Mr. Burton had charge of the design and installation of chemical process and material handling systems in the company's plants throughout the country. He graduated from the University of Florida in 1956 with a degree in industrial and mechanical engineering.

Canada Hog Group Enters Packing Field

TORONTO—The Ontario Hog Producers Assn. voted unanimously at a recent meeting to enter the packing field on a large scale with a number of plants across the province for the handling of beef, lamb and veal, in addition to pork.

The association is seeking support of a debenture issue of at least $1 million and aims for $2 or $3 million to support the central organization and provide operating capital. Funds raised throughout the province would finance the building of plants where local cooperatives are to be located. It is hoped the organization may raise $10 million within a year.

The association launched its appeal for pledges to buy debentures almost as soon as the meeting had come to a halt. The drive will continue until packing plants are built and the FAME (Farmers Allied Meat Enterprises) stamp appears on the finished product on grocery shelves.

Mobile Embargo Off

MOBILE, ALA.—A week's embargo on rail shipments of grain into the Mobile port has been lifted, after port officials filed a protest with the Interstate Commerce Commission. Officials termed the embargo unfair and discriminatory.

A similar embargo was put into effect in New Orleans at the same time, due to heavy arrivals of railroad cars at ports.

L. A. Parish, executive assistant at the State Docks went to Washington to protest the action of the Association of American Railroads to the ICC's P. G. Reider, chief of the commission's bureau on safety and car service.

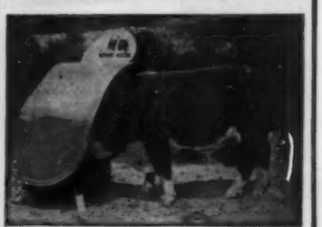
FOSFORO *high-quality, economical mixing phosphorus*

Write for Information SHELLBUILDER COMPANY HOUSTON, TEXAS

Without exception every large feed manufacturer recommends oyster shell in its feeding management bulletins. So, oyster shell is definitely necessary, and Shellbuilder is your customers' best buy. 100% guaranteed quality. Give Shellbuilder a try.

SHELLBUILDER COMPANY • MARINE BUILDING • HOUSTON, TEXAS / *Pure Crushed Reef Oyster Shell*

REPEAT CUSTOMERS PROVE . . . THE
WHIRLWIND FEEDER
DOES A BETTER JOB — LONGER!



For mineral and salt feeding. It's portable, durable—all steel corrosion-protected! For details regarding dealerships write . . . .

COLLIER LIVESTOCK FEEDER CO.
BOX 896-G, RALLS, TEXAS

FOOTBALL BLENDER—Protein Blenders, Inc., Iowa City, Iowa, manufacturer of BP Feeds, recently entertained over 300 BP dealers and their wives at the BP Football Blender in Iowa City. Here coffee and doughnuts were served as persons arrived at the plant before going on to the Iowa Hawkeye-Oregon State football game. Shown in the center with a striped necktie is C. U. Kelly, Jr., president of the firm.

300 Attend BP Feeds Football Blender

IOWA CITY, IOWA—Protein Blenders, Inc., manufacturer of BP Feeds, entertained over 300 BP dealers and their wives from Iowa, Illiness and Wisconsin at the "BP Football Blender" here recently, the day of the Iowa Hawkeyes' first game of the 1960 season.

Among the day-long schedule of events were an open house held at the offices of Protein Blenders feed plant, office and feed plant tours and a dinner held at the Mayflower Inn.

Climaxing the day's activities was the attendance by over 300 BP dealers, their wives and company representatives at the football game between State University of Iowa's Hawkeyes and Oregon State.

A police-escorted nine bus caravan took the entire group through the city to the Iowa Stadium and back to the BP plant after the game.

This is an annual business appreciation affair sponsored by Protein Blenders, Inc., for their dealers, according to C. U. Kelly, Jr., president.

BIG CHIEF
Pit Augers • Elevator Legs • Mixers • Scalpers • Graders • Earcorn Crushers • Steel Bins

Hammer Mills 50 to 150 H.P.

Corn Cutters

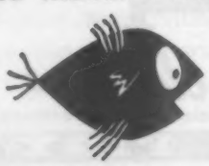
CUSTOM MILLERS SUPPLY CO.
BOX 537 MONMOUTH, ILLINOIS
MANUFACTURERS OF QUALITY MILLING EQUIPMENT SINCE 1930

Herman Nagel's
Trace Mineral
CONCENTRATE

Where only trace minerals are to be added, Herman Nagel's Trace Mineral Concentrate supplies all eight, in correct balance.

THE HERMAN NAGEL CO.
53 W. Jackson Blvd., Chicago 4, Ill.

WHAT!
Food Without a Hook?



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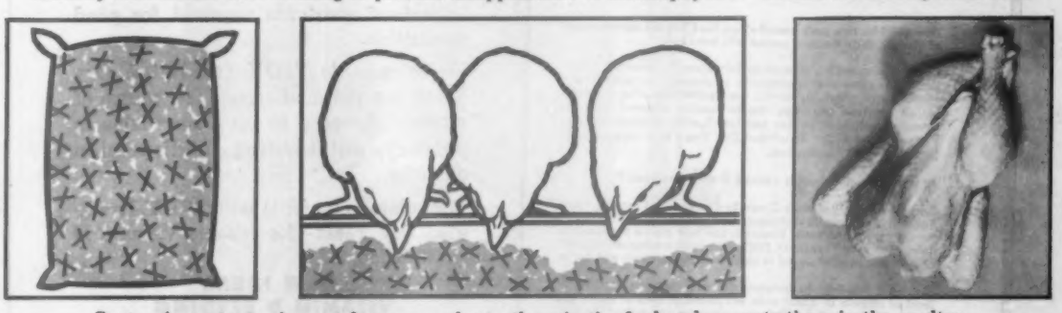

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Protects vitamin A through digestion and metabolism	No	Yes
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PLANNING COMMITTEE—The planning committee for the Conference on Cottonseed Protein for Animal and Man to be held Nov. 14-16 in New Orleans was composed of, clockwise, from lower left: Dr. Richard A. Phelps, National Cottonseed Products Assn.; Dr. Vernon L. Frampton, the U.S. Department of Agriculture's Southern Regional Laboratory; E. L. Patton, Southern Regional Laboratory; Dr. Aaron Altschul, Southern Regional Laboratory; T. H. Hopper, Southern Regional Laboratory; Dr. Layton Allen, United Nations Children's Fund, and Ralph M. Percell, Southern Regional Laboratory.

Cottonseed Protein Meeting Scheduled

NEW ORLEANS—"Cottonseed Protein for Animal and Man" will be the subject of a conference Nov. 14-16 at the U.S. Department of Agriculture's Southern Utilization Research and Development Division in New Orleans, La.

Sponsors of the conference are the United Nations Children's Fund (UNICEF), the National Cottonseed Products Assn., and USDA.

Purposes of the conference, as outlined by the planning committee, will be: (1) To review the available information on cottonseed protein in rations for animal and man; (2) to define optimum quality of cottonseed products; (3) to consider feasible methods and conditions for producing cottonseed protein of high nutritive quality, and (4) to pinpoint areas of research necessary to foster broader use of cottonseed protein.

Those who have already accepted invitations to participate in the program are: Dr. J. B. Allison, director of the bureau of biological research, Rutgers University, New Brunswick, N.J.; H. D. Fincher, Anderson-Clayton & Co., Houston, Texas; Dr. V. L. Frampton, southern division, New Orleans; Dr. A. R. Kemmerer, head, department of agricultural biochemistry, University of Arizona, Tucson; Dr. C. M. Lyman, department of biochemistry and nutrition, Texas A&M College, Bryan, Texas; Jean Mauron, Nestle Co., Vevey, Switzerland; Nevin S. Scrimshaw, Instituto Nutricion de Centro America y Panama (INCAP), Guatemala, and Dr. Richard Phelps, National Cottonseed Products Assn.

Diamond Alkali Sales, Earnings Set Records

CLEVELAND — Diamond Alkali Co. has reported that sales and earnings for the first nine months of 1960 reached new peaks.

For the first nine months of this year earnings increased 10% over the corresponding period of 1959 and amounted to $9,227,000. This is $3.17 a share on the 2,909,364 shares outstanding. Sales increased 4% over the like period of 1959 and amounted to $107,038,000. Third quarter 1960 results showed a moderate decrease from the record levels established in 1959. Sales were $35,496,000, a decrease of 3% from the same period of 1959. Earnings amounted to $2,853,000 or 98¢ a share.

Commenting on these results, Raymond F. Evans, chairman and president of this international producer of basic chemicals, said, "In spite of the continuing effect of the cost-price squeeze on our operations and a moderate softness in demand for certain of our products as evidenced by the lower third quarter sales, we anticipate that sales and earnings for the year will establish new records."

Here's what we are telling your customers about

THE IMPORTANCE OF VITAMIN D NUTRITION

In this educational series to farmers and feeders, Dr. G. C. Wallis answers important questions about Vitamin D Nutrition.

Dr. Wallis Answers

YOUR QUESTIONS ON VITAMIN D NUTRITION

Q: How can I be sure each pound of my feed has the same amount of vitamin D as the next pound will have?

A: Uniform distribution depends mainly upon the physical properties of the vitamin D concentrate, proper mixing methods and efficient equipment. By careful management, mixing, adequate for all practical purposes, can be readily achieved. The extremely small particle size and free-flowing characteristics of Fleischmann's FIDY Irradiated Dry Yeast help tremendously in getting good distribution.

Q: At what age of animal is vitamin D most important?

A: Lack of adequate vitamin D can be disastrous at most any age. Formerly, vitamin D deficiency was thought to occur only in young growing animals. Research has now shown that mature dairy cows need vitamin D. Difficulties from inadequate vitamin D have also been observed in older beef cattle, sheep and swine.

Q: Is there a relationship between the daily feeding of a higher level of vitamin D, 8,000 units per pound of feed or more, and the possible control of milk fever without having to feed the massive doses recommended for the short period before freshening?

A: Recent careful research provides reasons why benefits from year around feeding of higher levels of vitamin D might be expected. Older cows have previously unrecognized difficulties in absorbing and utilizing calcium. Extra vitamin D helps. The results of clinical and practical studies on the control of milk fever by fortifying regular dairy rations at higher levels are very encouraging.

Q: Does artificial drying lessen the vitamin D content of hay?

A: Figured on a dry matter basis, the vitamin D content of artificially dried hay is probably about the same as was in the green forage before drying. During field curing vitamin D tends to increase but the amount is not as great as commonly supposed. Reports on 13 samples showed an average increase of only 115 units per pound during field curing. Such an increase in vitamin D in a whole ton of hay would be worth only about ½ cent.

Q: What is the difference between brewers dried yeast and irradiated dry yeast?

A: Brewers dried yeast is a by-product from the brewing of beer and ale which is used in feeds mainly as a source of the B-complex vitamins and protein. FIDY Irradiated Dry Yeast is a primary grown yeast which has been subjected to ultraviolet irradiation under carefully controlled conditions to produce vitamin D_2. It is used in four-footed animal feeds solely as a source of vitamin D.

A. C. Wallis

For more complete answers to any of these questions write to Dr. G. C. Wallis, Director of Nutrition, Agricultural Department, Standard Brands Incorporated, 625 Madison Avenue, New York 22, N. Y.

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Fleischmann's FIDY Irradiated Dry Yeast is a rich and economical source of vitamin D_2—easy to use, dependable in potency, outstanding in dispersion qualities.

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- The prevention of milk fever.
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- The variability of vitamin D from natural resources.
- The availability of calcium reserves in older cattle.

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The Animal Production Business as a Customer of the Chemical Industry

By T. L. McClintock and R. M. Prather
Merck & Co., Inc., Rahway, N.J.

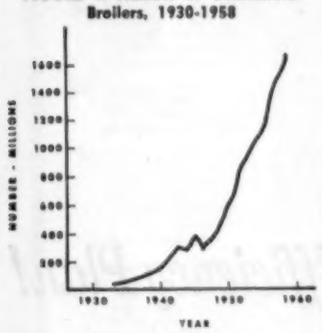
The business of raising economic animals in the U.S. has become a major industry and a quarter-billion dollar a year customer of the chemical industry.

There are few areas of enterprise that have undergone more profound changes than the animal industry since World War II. The production of commercial broilers is the outstanding example. Twenty years ago a chicken dinner was considered the symbol of a special occasion. The total U.S. production of chickens amounted to 200 or 300 million annually (or about 2 per capita) many of which were retired laying hens. These chickens were raised in small farm flocks, usually along with pigs and cows and were delivered to market in an infinite variety of sizes, shapes and weights. The ratio of meat to bone and the degree of tenderness of these birds were capable of sufficient variations as to make shopping and preparation of a chicken dinner more than a little of an adventure.

In contrast, production of broilers today is an industrial operation wherein carefully compounded feeds are converted to a rigorously standardized meat product, according to an exact time schedule and under the closest of cost accounting. Single establishments producing 10 million birds per year are not uncommon. Current production of commercial broilers is approaching 2 billion a year or 10 per capita.

Figure 1 shows the growth of the broiler industry from the 1930's to the present. This development never could have taken place without the research and production of the chemical industry. While it is now possible to turn out a 3 lb. broiler with less than 7½ lb. of feed, this feed is likely to contain vitamin A, niacin, riboflavin, pantothenic acid, choline chloride, methionine, lysine, vitamin B_{12}, vitamin D, vitamin K and on and on.

FIGURE 1. Number of Commercial Broilers, 1930-1958



Provides Disease Control

In addition to providing nutritional building blocks, the chemical industry, by providing the means of controlling disease, has made mass production animal and poultry operations possible. Such diseases as coccidiosis, Newcastle, blackhead, chronic respiratory disease, if not controlled, would make confinement broiler operations as they are now practiced, utterly impossible.

In the battle to control these diseases, the chemical industry has had to wage a constant race against ever changing strains of resistant organisms and new stresses. While there is a constant challenge to develop better medicinals, the success of the industry in meeting this challenge thus far can be illustrated by the fact that diseases known to be capable of completely eliminating the commercial broiler industry as we know it today are controlled to the point of causing losses equal to only a small fraction of total industry production.

Similar advances in nutritional research and disease control are making their mark in other phases of the animal industry. There are currently more eggs being produced in the U.S. than ever before, yet there are fewer laying hens in the country now than there were in 1925. Likewise, record production of milk is coming from a dairy herd which numbers 5 million fewer cows than were on hand 10 years ago.

Perhaps, the most rapidly changing of all animal industries today is the production of cattle for beef. There are now in existence beef cattle feedlots each capable of feeding out more than 100,000 animals a year. These feedlots are highly mechanized operations often with their own feed mixing mills and chemical control laboratories.

An example of this trend toward industrialization can be seen in the next two charts. Figure 2 shows the number of beef cattle feeding establishments in Iowa as a function of the total beef feeding business in that state. Iowa is typical of the Corn Belt where feeding-out of cattle originated and where the small family type operation still persists. From this chart, it can be seen that in order to reach owners of 50% of the cattle on feed in Iowa, it would be necessary to call on nearly 25,000 individuals. California on the other hand is typical of the new type of cattle feeding—large corporate specialized enterprises. While California already feeds out nearly half as many cattle as Iowa, it can be seen from Figure 3 that to reach owners of 50% of these cattle would require contacting less than 50 individuals.

FIGURE 3. California Feedlots—Relationship of Number of Customers to Total Market

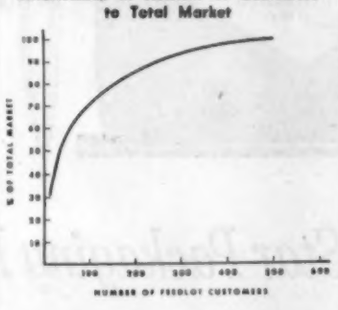
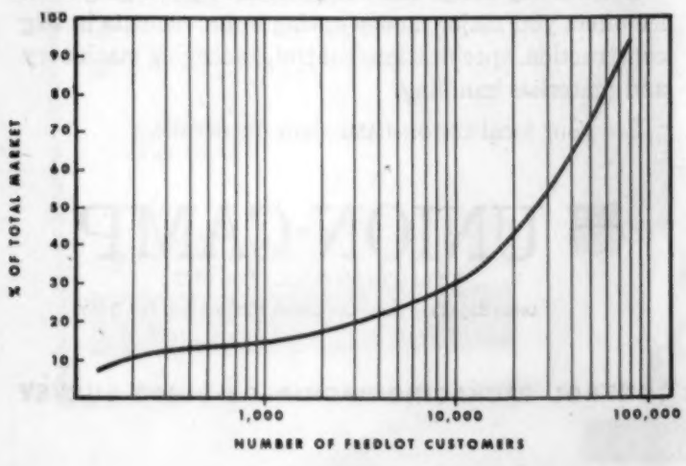


FIGURE 2. Iowa Feedlots—Relationship of Number of Customers to Total Market



The animals in these feedlots are fed a carefully balanced ration containing a wide variety of products of the chemical industry. These include vitamins A and D, diethylstilbestrol and other similar hormones, antibiotics, enzymes, trace minerals, etc. Even as basic an industrial chemical as urea is used in cattle feeding in quantities approaching 200 million pounds a year as a protein source.

Rapid Growth

Prior to 1955, use of manufactured nutritional microingredients was all but unknown in the beef cattle business. It now represents some $20 million annual business to the chemical industry and is based almost entirely on products and practices developed within the past five years.

Powerful economic forces are acting to accelerate the revolution now under way in cattle raising. Principal among these forces is the demand of the supermarket chains for meat cuts of uniform size and quality. In order to provide a supermarket with a long showcase full of steaks and chops of the same size and all selling at the same price, it is necessary to develop finished cattle of a standard configuration and finish on a reproducible basis. In this task, genetics, nutrition and animal health all play important parts.

Moreover, price competition caused in part by the concentrated buying power of the food chains makes it imperative for the feedlot operator to get the maximum yield of meat per dollar spent on feed and feedlot investment. Hence, the interest in growth stimulating nutritional items and disease control agents, already high, will inevitably increase.

While considerable progress has

"A More Important Partner in Food Production"

There "is good reason to believe" that the total animal health and nutrition market, now approaching $250 million annually, will reach the $1 billion range by 1970, Mr. McClintock and Mr. Prather say.

The pair firmly believes that the chemical industry will become an increasingly important partner in the production of food for the growing population.

In this article the authors point out the rapid growth of the chemical industry in food production and the current trends and developments that may aid—or hinder—this growth. Following are excerpted quotes which emphasize some of the major points made by the authors:

". . . Use of manufactured nutritional microingredients in the beef cattle business . . . now represents some $20 million annual business to the chemical industry and is based almost entirely on products and practices developed within the past five years. . . . Microingredients worth some $40 million at the manufacturer's level are currently being used in swine feeds.

"The bulk of products of the chemical industry now being sold to animal producers did not exist 10 years ago.

"The gross annual sales of the animal industry are currently some $15.5 billion per year. . . . It is evident that (disease) losses (of the current) magnitude will continue to spur research efforts aimed at their reduction.

"Research in the animal health and nutrition fields now requires the tools and skills comparable to those in human pharmaceutical research.

". . . It often cost a half million dollars merely to determine whether or not a new product can legally be sold. Moreover, the time required for such testing is such that years can go by before a start can be made toward recovering one's capital.

". . . The federal government, by its increasingly all-encompassing regulatory control, is literally forcing the animal health and nutrition industry in the direction of concentration among the larger companies in the industry.

". . . To reach owners of 50% of the cattle on feed in Iowa, it would be necessary to call on nearly 25,000 individuals. . . . To reach owners of 50% of these cattle in California would require contacting less than 50 individuals. . . ."

EDITOR'S NOTE: *The accompanying article was presented as a talk by Thomas L. McClintock, market research agricultural products manager for Merck & Co., Inc., before the chemical marketing and economics division of the American Chemical Society recently. Robert M. Prather, head of the market research division, is co-author of the article. The text and illustrations were supplied by the American Chemical Society.*

FIGURE 4. Principal Products Included in Animal Feeds

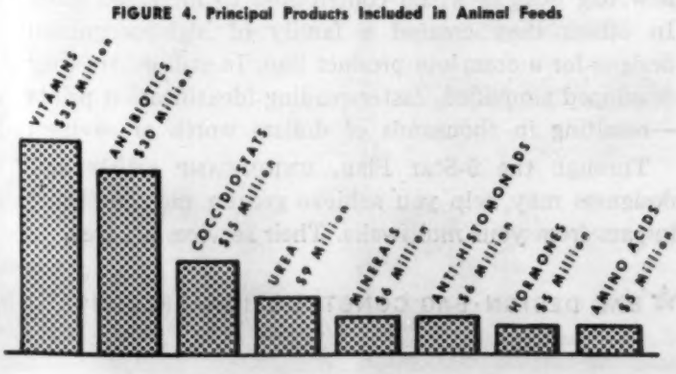


FIGURE 5. Feed Additives Market by Class of Animal

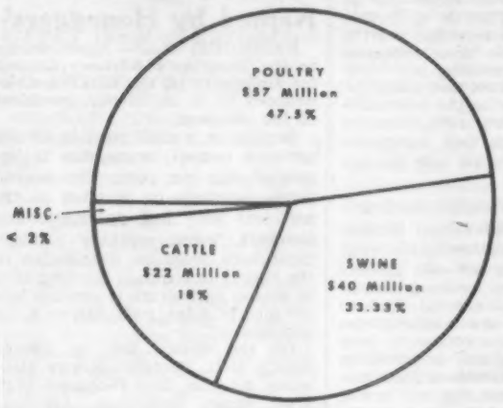
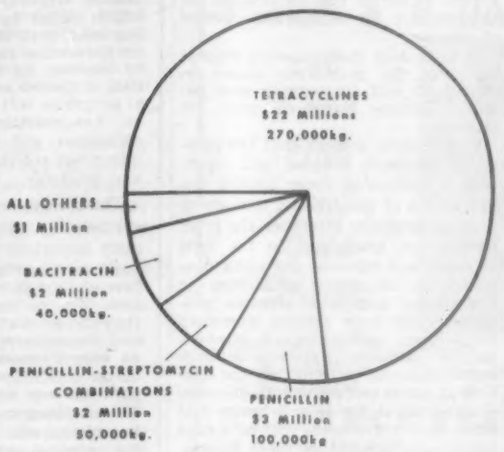


FIGURE 6. Antibiotics in Feeds by Type



been made in improving feed conversion efficiency in beef cattle, it still takes well over 10 lb. of feedstuffs to produce a pound of weight gain in a cattle feedlot as compared to slightly over 2 lb. of feed required to produce a pound of chicken. Research and production of the chemical industry are destined to play a major role in narrowing this gap.

The nation's swine are also substantial consumers of chemical products. Microingredients worth some $40 million at the manufacturer's level are currently being used in swine feeds. These include antibiotics, virtually every known vitamin, nitro compounds, anthelmintics, etc.

As is the case in beef cattle, increasing pressure is being brought to bear on swine producers to produce meat of uniform quality. The consumer in the U.S. has developed a taste for lean pork. The supermarket chains, therefore, demand uniformly lean meat from the packers. The packers in turn apply pressure on the producers. The producer cannot grow a pig of the required specifications by simply turning him loose in the corn field. Nor can genetics alone solve the problem. The answer must include using nutritional microingredients throughout the life of the hog. This, of course, is now being done by some growers and increasing customer pressures will force rapid adoption of optimum nutritional practices by all growers who wish to compete in the market. Hence, this represents another substantial growth area for feed additives produced by the chemical industry.

All told, the chemical industry supplies the animal production industry with products worth nearly $250 million a year at the manufacturer's level.

Let us examine this market in some detail. Products of the chemical industry find their way to animals by two basic routes. One is via feed ingredients; the other, by what we refer to as the animal health route —specific medication administered via injection, drinking water, pills, sprays, etc.

Figure 4 shows the principal products normally included in animal feeds.

Figure 5 shows distribution of feed additives by class of animal.

Vitamin A Growth

The largest and fastest growing item in the vitamin total is vitamin A. It is estimated that some 200 trillion units of this vitamin worth some $20 million is being incorporated in animal feeds this year. This is nearly three times the quantity consumed by humans in the U.S. and levels of use in feeds are continuing to rise. The tremendous use of this vitamin has been spurred by information suggesting a vast range of benefits—everything from alleviating certain types of parasitism in poultry to improving the grade of beef cattle.

B complex vitamins account for most of the remainder although vitamins D, E and K also enjoy considerable use.

Figure 6 shows the breakdown of antibiotics used as feed additives.

As in the case of vitamin A, the total tonnage of antibiotics consumed by animals exceeds considerably the volume used by humans in the U.S.

The market for packaged animal health products consists of some 10,000 products with aggregate value at the manufacturers' level of $100,000,000 a year.

Twenty to twenty-five per cent of this market is represented by biologicals, the remainder being pharmaceutical preparations of all kinds.

Figure 7 shows the breakdown of this market by major disease conditions treated.

The principal pharmaceutical products used are antibiotics, sulfonamides and steroids, often in combination. In fact, virtually every drug in the human pharmaceutical arsenal is being brought to bear in the battle against animal disease losses.

Figure 8 shows the breakdown of the animal health market by class of animal.

While the business of supplying chemicals to the animal industry is large and growing, it is not without severe problems to the seller. There are many strong firms in the field and competition among suppliers is increasingly intense.

The animal health business is split up among many competitors, no one of which has a major share of the total market. Pricing structures have become chaotic with discounts, deals, free goods and premiums figuring in virtually all transactions. Not only a strong, agile and well-trained sales force, but also extensive marketing research and rapid communications are necessities of survival in this market.

In many respects, however, all of the problems of competition do not equal the problems posed by the tremendously increasing costs of research and regulatory clearance. The sciences of animal health and nutrition have reached a degree of sophistication comparable to that of human medicine. Research in these fields now requires tools and skills comparable to those in human pharmaceutical research.

Added to the high investment and operating costs necessary to do research in this field are the rapidly mounting costs of satisfying the regulatory requirements for new animal products. Chronic toxicity data through many generations of animals must be obtained. It must be proven that carcinogenic effects are absent, and it is even necessary to identify and establish the effects of metabolites and degradation products. Assay techniques often involving such sophisticated procedures as radioactive isotope dilution and mass spectrometry must be developed and perfected. As a result, it often costs a half million dollars or more merely to determine whether or not a new product can legally be sold. Moreover, the time required for such testing is such that years can go by before a start can be made toward recovering one's capital.

The stakes in this game have become so high that only those companies with large research organizations and with considerable resources of risk capital can afford to join in the race for new and better products. Moreover, even the largest companies are forced by the sheer costs of researching and clearing new products to concentrate their research in those areas where potential returns are the highest, thereby further narrowing and pinpointing the areas of competition.

It is indeed ironic that at the very time that certain politicians are loudly accusing the chemical industry of undue concentration of economic power, the federal government, by its increasingly all-encompassing regulatory control, is literally forcing the animal health and nutrition industry in the direction of concentration among the larger companies in the industry.

One manifestation of this effect has been the series of mergers taking place within the past five to ten years in which the majority of small formerly independent animal health product firms have become affiliated with the larger chemical and pharmaceutical companies. While it is true that this has been caused, in part, by the change in the character of the market, an overriding reason has nevertheless been the tremendous research capacity necessary to remain competitive.

In any case, it is important that the business of raising animals is becoming a highly industrialized operation. Retail operations in this business, while undoubtedly destined to remain important for many years, are nevertheless gradually being displaced by large volume industrial scale purchasing direct from manufacturer to integrated user. As a corollary to this, consumer-type advertising and appeal to emotion are being superseded by sales arguments based upon technical data and scientific rationale. This, in turn, increases further the emphasis on research and technical service on the part of supplier companies.

So rapid are the changes taking place in the animal industry and so complex are the variables affecting

FIGURE 7. Animal Health Market by Disease

C.R.D. of Poultry	$ 15,000,000
Pneumonia & Shipping Fever of Cattle	15,000,000
Hog Cholera	15,000,000
Mastitis - Dairy Cattle	10-12,000,000
Enteritis Complex - Hogs & Cattle	8-10,000,000
Internal Parasites	10-12,000,000
External Parasites	4-5,000,000
All Others	20-25,000,000

FIGURE 8. Animal Health Market by Class of Animal

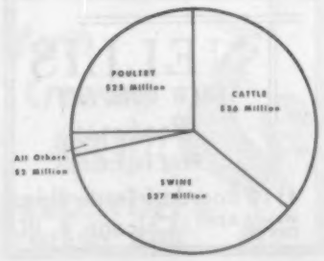


FIGURE 9. Gross Annual Sales of Animal Industry
(Value of Meat, Milk, Eggs and Wool at Growers' Level)
U.S. TOTAL: $15.5 Billion

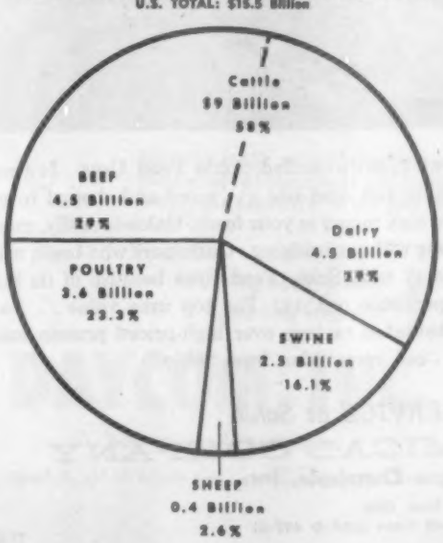


FIGURE 10. Estimated Losses Due to Livestock Disease
U.S. TOTAL: $1.836 Billion (USDA Estimate)

it, that it is indeed a major task just to keep informed as to the current status—much less to predict the future.

Technological Advance

The industry is in the midst of a technological renaissance. The bulk of products of the chemical industry now being sold to animal producers did not exist 10 years ago. One can only speculate as to the products that will dominate this market during the 1960's. It is a good bet, however, that they will represent developments still beyond the current frontiers of science.

Another great variable arises from the fact that animal production is inextricably bound up with the overall farm problem in the U.S. and one cannot predict to what extent the natural laws of economics will be distorted by political forces.

Nevertheless, certain facts and trends can be discerned. The gross annual sales of the animal industry —the value of meat, milk, eggs and wool at the producers' level—is currently some $13.5 billion per year. Figure 9 shows the distribution of this market by the several species of animals.

It is evident that livestock disease losses of the magnitude shown in Figure 10 will continue to spur research efforts aimed at their reduction.

It is equally evident that the power of consumer demand wi'l represent a continuing force toward improvement of quality and uniformity of meat products. Moreover, the price competition traditional in the food business will continue the rapid concentration of animal production in the largest and most efficient producers. The very factors necessary to achieve uniformity of product, namely confinement growing in large establishments, will multiply the hazards of stress and contagious diseases.

The market for animal health and nutritional ingredients will be forced continually upward by these factors. There is good reason to believe that the total animal health and nutrition market now approaching $250 million annually will reach the $1 billion range by 1970. It is further apparent that the emphasis will be on prevention rather than treatment of diseases. An increasing inter-relation of disease control and nutritional programs will bring the veterinarian, the nutritionist, the chemical companies and the food companies into closer collaboration with the animal producer.

Thus, it can be seen that the chemical industry will become an increasingly important partner in the most basic of all enterprises—the production of food for our growing population. We can predict with certainty that the products of our laboratories and factories will continue to play an ever increasing role in providing better and more abundant food supplies for our nation and the world. The challenges and the responsibilities of this role are great, but so are the potential rewards. It is a role of which the chemical industry can indeed be proud.

Advisory Council Is Named by Honeggers'

FAIRBURY, ILL. — Appointments to the President's Advisory Council for Honeggers' & Co. have been announced by E. F. Dickey, president of the company.

Serving in a staff position on the advisory council, a member is appointed for one year. The council meets quarterly or as often as the president may feel necessary. The members "assist company management with ideas on distribution of the variety of company products used in animal agriculture to produce better quality meat, milk and eggs for less money."

On the council are: in Illinois, Emory Holt, Peotone; Robert Holtkamp, Aviston; Earl Broquard, Watseka; Bruce Verkruyse, Atkinson; Chester Walter, Grand Ridge; Carlton Klopfenstein, Normal; Marwood Hendrix, Herscher; Glen Sunderland, Newton; Bert Ruff, Quincy; Bob Edgecombe, Nokomis; James Yeoman, Pecatonica, and Karl Wilke, Madison, Wis.; in Indiana, Glen McDaniel, Marion; Larry Gerber, Bluffton; Vic Feaster, Inwood; John Honegger, Wolcott, and Bernard Sherburn, Decatur, Mich.; in Ohio, Vaughn Riegel, New Paris; Lewis Gottfried, Lovell; Ralph Walters, Orrville; Ivan Pirtle, Montpelier; Mike Youngpeter, Delphos; J. R. Cornelius, Harrison, and Robert Rapp of Lancaster, Pa.; in Iowa, Ralph Platt, Mediapolis; H. P. Krogh, Iowa Falls; John Rasmussen, Anita; Francis Buckley, DeWitt; Eldon Beers, Cushing; Zane Bellcour, Storm Lake, and Gayle Hoover, Indianola; in Nebraska, Herman Stubbendeck, Elmwood; Ray Zucker, Scribner; Al Arends, Seward, and Floyd Bond, Central City; in Kentucky, James Sanford, Mayfield; Bert Lilly, Hopkinsville, and Robert Jordan, Union City, Tenn.

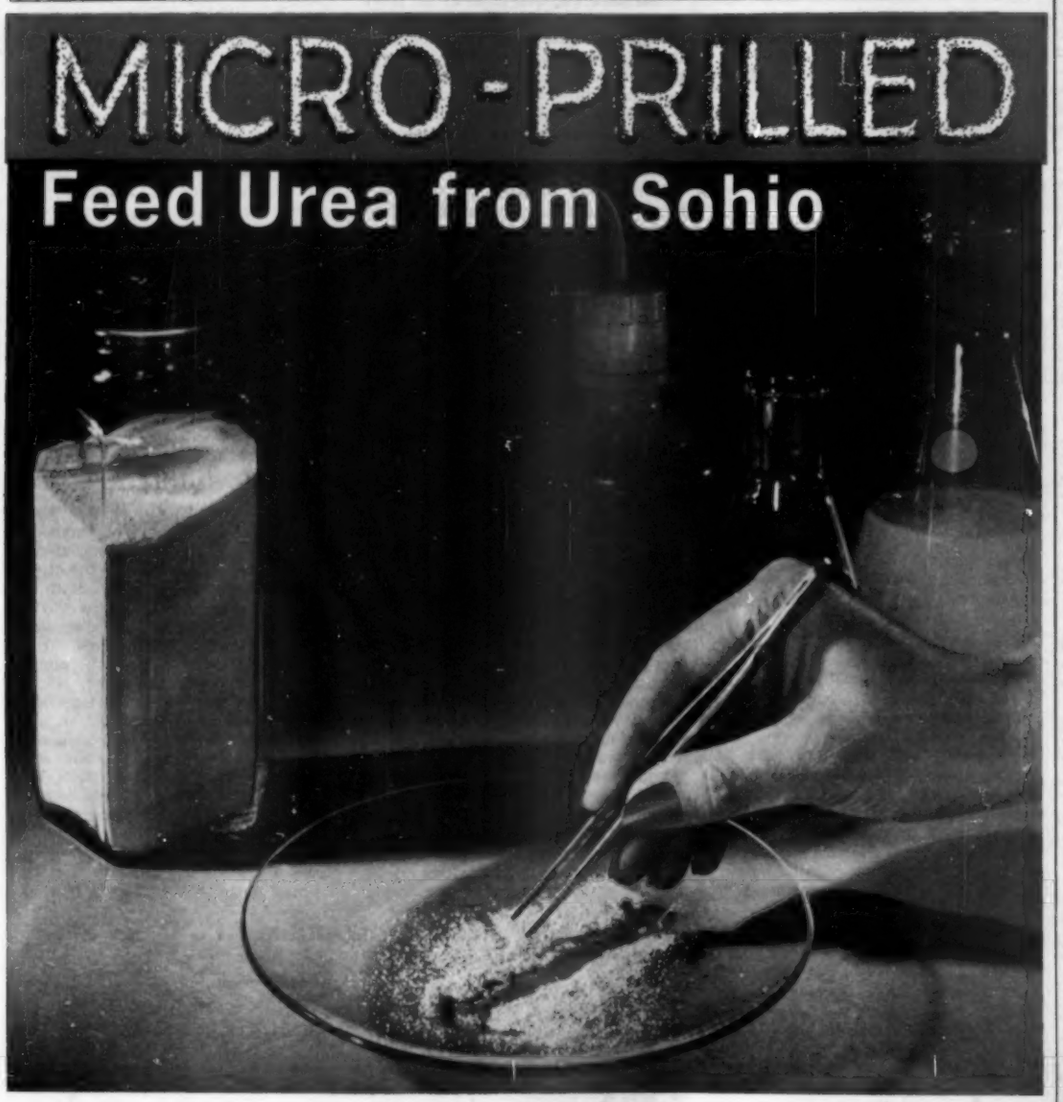
Monsanto Appoints Sales Executive

ST. LOUIS — Monsanto Chemical Co. has moved to strengthen its farm chemicals sales service in western states by appointing a senior sales representative exclusively to that area, according to an announcement.

Charles L. Fetzner, San Francisco, former western district sales manager, has been named to the post, a new executive position in Monsanto's Agricultural Chemicals Division.

In making the appointment, J. Paul Ekberg, marketing director for the division, said that the need for such a post was pointed out initially by Mr. Fetzner as necessary to maximize service to the rapidly expanding farm chemicals market in this region.

Succeeding Mr. Fetzner in San Francisco as sales manager of the division's western district is Robert L. Olcott, Kansas City, who has been assistant manager for the St. Louis district.



The free-flowing, non-caking protein source that meets every quality test

Sohio Feed Urea is much more than just an ordinary nitrogen-supplying, 262% protein source. Constant quality control assures the reliability of free-flowing, micro-prilled Sohio Feed Urea. It's non-caking and dust-free . . . sized and shaped to mix and stay mixed in your feeds. Unloads easily, moves along without bridging. Customers who begin using it stay with Sohio Feed Urea because of its high, dependable quality. For top urea value . . . and substantial savings over high-priced protein meals . . . call your "Man from Sohio."

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. . . we're serious about SERVICE at Sohio

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Agent for Solar Nitrogen Chemicals, Inc.

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National Egg Council Urges New Approach To Pricing of Eggs

KANSAS CITY—Directors of the National Egg Council conclude in a recent statement of policy that "the soundest approach to a stable egg industry involves a new approach to price determination."

It may be necessary, they say, for the industry to depart from its dependence on central wholesale markets as a basis for all price determination. "Greater reliance should be placed on bargaining between individual production units or their representatives and assemblers, processors or retailers," NEC officials say. "In such instances, price determination should start with cost of production on a given volume of eggs. Pricing formulas would carry provisions enabling producers to share in retail price fluctuations beyond normal retail markups."

Reappraisal Urged

NEC believes that egg producers should take it upon themselves individually and collectively to reappraise pricing and marketing procedures—because the current prospective return on investment in egg production is below that of former years. "Emphasis should be placed on obtaining a steady outlet for a given volume of eggs at prices which reflect a reasonable return on labor and investment," says NEC's statement of policy.

NEC suggests that producers whose volume fails to achieve a level which will adapt itself to the program recommended by the organization should consider working within a group which would establish rigid quality standards and employ marketing machinery which would enable them to compete on the market they choose to serve.

NEC notes that the trend toward direct marketing appears to be firmly established, "yet virtually all eggs marketed today continue to be priced on the basis of quotations arrived at through nominal trades in large central markets. Only a minor portion of the nation's production actually is sold through these wholesale channels."

This pricing situation, NEC says, can be improved through unit bargaining. "In effect, producers operating independently or in groups—depending on size and inclination—should strive to bid for the business of various retailers, processors or distributors and tailor production to the market potential," NEC proclaims.

The council recommends that small pilot plants be established to determine best procedures to follow in a revamped system of price determination. "If successful, the plan thereafter will grow automatically through an exchange of experiences at local, state and national levels by producers holding a vested interest," NEC states.

Against Federal Order

NEC's policy statements offer the opinion that a federal egg marketing order concerning itself with production quotas or quality controls "would provide a most frustrating experience for its administrators."

NEC says this because "thousands of producers sell eggs direct to housewives," because "production quotas which might create a satisfactory level for marginal producers would at the same time create highly remunerative returns for the more efficient" and because "pressure for adjustments in quotas would be continual, with all quotas eventually concentrated in a few strong hands."

make a B-line for the 3-B's

call *Babe, Bob* or *Bus Stuart*

Specialists for 38 years in: Bob Bus Babe

★ MILLFEEDS ★ LINSEED MEAL
★ SOYMEAL ★ SCREENINGS ★ ALFALFA MEAL

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Put this dryer to work—
WITHOUT BUYING IT!

Try it before you buy it! Take the guesswork out of drying. With ARID-AIRE's trial plan you know whether your business will justify *any* grain dryer. Only ARID-AIRE offers you this opportunity to prove to yourself before you buy, that grain drying *is* profitable. You'll discover that ARID-AIRE builds profits, promotes business and pays for itself.

For long pull profits in grain bank operation, a dryer helps you *eliminate* 3 customer problems:

1. Lets you take high-moisture grain at harvest time.
2. Eliminates down-grading — everyone gets credit for No. 2 quality grain in the grain bank, and takes out equal or better.
3. There is no spoiled grain resulting from wet or inferior grain.

Investigate the exclusive features of ARID-AIRE — only ARID-AIRE offers a complete range of horizontal and vertical dryers in capacities to meet any requirements — only ARID-AIRE offers you the opportunity to TRY — BEFORE YOU BUY!

Write today and get the details!

DAYCOM, INC.

A Subsidiary of The DAY Company

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"PRODUCTS OF PROGRESS"

Worth Crowing About!!

FEEDSTUFFS WANT ADS

Conditions Improved For East Poultrymen, Says Reserve Bank

WILMINGTON, DEL.—After two very bad years in a row, poultrymen in Delaware, Pennsylvania and New Jersey are said to be recouping some of their losses, reports the Federal Reserve Bank of Philadelphia in its October "Business Review."

Broiler markets have been somewhat stronger than in either of the past two years, the publication pointed out.

"Although prices have increased only moderately, this could be a good thing for an industry seemingly plagued with heavy overproduction whenever a sharp rise occurs in any important market," the Business Review stated. "Poultrymen with laying flocks also are reporting a somewhat better situation. Egg prices are higher and have been subject to less fluctuation than a year ago.

"Although farm production costs have not risen perhaps as much as in some other years, they still point upward. Taxes, wages and machinery, in about that order, are the cost components we hear the most complaints about. Tax increases seem to be associated with rising land values in the vicinity of our larger cities and towns."

Dairy herds are described by the publication as being in excellent condition.

"Little supplementary feeding has been necessary, so dairymen have saved on the feed bill," the Business Review said. "Moreover, with ample supplies of home-grown feeds in prospect they appear to be in good shape for the winter and early spring.

"Milk production has continued high. County agents are reporting generally satisfactory market conditions—but, of course, the milk check always could be larger. Surplus milk problems have not been too serious and in some areas a slightly larger proportion of output has been going into the fluid milk market."

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The Finest Money Can Buy!

Fabricated to suit your specifications. Available in "Standard," Flared, Weather-Tight, Dust Seal, Drop Bottom, Dome and Tube Type, with plain Spouts or Rack and Pinion Slide Gates. You'll like Hammond workmanship.

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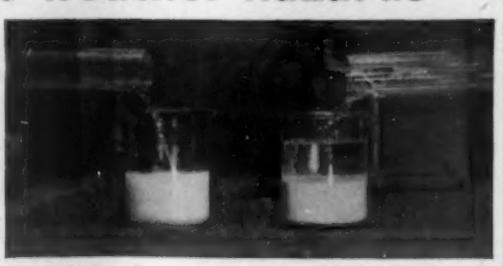
716 HOFFMAN ST., HAMMOND, IND. • WINONA, MISS. • SANTA CLARA, CAL.

Lost salt car proves EV'R-FLO weather resistance!

For nine dripping days and freezing nights last March a hopper car of Carey Ev'r-Flo Salt was held in a feedmill yard. Despite condensation, frost and humidity, and wide variations in temperature the Carey Ev'r-Flo Salt did not set-up in the car, poured swiftly through conveyors and was moved into and out of storage bins without coning or bridging.

CAREY EV'R-FLO...first mixing salt engineered to reduce weather hazards

Flows Fast In All Kinds of Weather! Cone test shows Carey Ev'r-Flo spreads wider, flows faster, disperses more thoroughly to mix with other ingredients. Friction makes ordinary salt flow slower; creates higher cone.



Actually Repels Water! "Laboratory Beaker Test" shows how water penetrates ordinary salt (left); floats on top of Ev'r-Flo Salt (right). This means less caking, lumping or bridging in your equipment.

TRY ONE ORDER AT OUR RISK!

Order a 40-Ton Hopper Car or a Bulk Truckload. If your first order doesn't flow freely and mix easily, your money will be refunded.

CAREY

THE CAREY SALT COMPANY
Hutchinson, Kansas

NOW IN BAGS

And if your mills are not equipped to handle Carey Ev'r-Flo in bulk, you will be pleased to know that now this same high quality mixing salt—Carey Ev'r-Flo is now available in 50 and 100 lb. bags. Take no risk . . . Order a 25 Ton Truckload of Carey Ev'r-Flo in bags. Ideal for batch mixing.

Letters to the Editor

'THE ADVERTISING VALUE OF THE EGG CARTON'

Bellingham, Wash.

To the Editor:

The advertising value of the egg carton is far from being used at its maximum capacity. The present egg cartons have the grade stamped on them, the name or number of the distributor and such advertising as "country fresh" or "quality eggs," whether or not they may have been six months in cold storage on their way from the farm to the consumer. Much valuable advertising space is lost, space that could be directed to improving consumer demand and combating the trend of less eggs being used per capita each year.

This space could be used to advertise the nutritional value of eggs, and the values that they contribute to health and well being. The nutritional analysis could be printed on the carton stating protein and vitamin content. A comparison of value as related to other foods could be shown.

This space could be used to give the proper cooking methods for the various ways in which eggs may be served, for improper cooking can partly nullify the flavor and food value of the product. This has been done in magazine articles and newspapers to some extent, but to have it printed on the egg carton would bring it to the immediate attention of the housewife. This space could be used to advertise various recipes in which eggs are the main ingredient. Written up in an appealing manner, and being readily available to the housewife, these recipes would be used.

Such advertising as this would assist in increasing the overall nationwide sale of eggs. It is done on milk cartons and on cereals and various other foods, but the egg wholesaler and the egg carton manufacturer have failed to use this valuable advertising space to the best advantage. Such advertising can and will assist in reversing the trend of declining egg consumption.

Ronald Bookey
Bookey's Quality Feed
Avoca Farm, Inc., Premium Eggs

KINDSTROM-SCHMOLL CO.
Representing Suppliers of Vitamins, Proteins and Minerals
418 Flour Exchange
Minneapolis 15 • FEderal 8-0615

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BROKER JOBBER
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MILO-KAFIR-WHEAT-FIELD SEED
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Claims *can't* control COCCIDIOSIS... But Trithiadol® *can!*

FACT **TRITHIADOL effectively controls ALL commercially important species of coccidia. Proved in over 18 months of actual commercial use...in ALL major poultry areas...in EVERY growing season.**

FACT **TRITHIADOL gives top feed conversion...up to $40 extra per 1000 birds in impartial comparative tests.**

FACT **TRITHIADOL, and ONLY TRITHIADOL, has all 9 of these major advantages.**

1. Effectively controls all economically important species of coccidia.
2. Completely safe for poultry; harmless to other warm blooded animals.
3. Superior feed conversion and weight gain.
4. Permits immunity to develop early.
5. Displays no adverse effects on egg production, shell color or yolk color.
6. Comparatively no effect on hatchability or fertility.
7. Is compatible with all commonly used feed ingredients.
8. Stable, free flowing, easily blended with feeds.
9. Effective in reducing tapeworm and large roundworm burden in chickens–a substantial aid in any worm control program.

Get ALL the facts on TRITHIADOL... SEND COUPON NOW!

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North Dakota Study Analyzes Ag Credit Problems, Practices

FARGO, N.D.—Results of a survey conducted in North Dakota may prove to be of help to feed manufacturers and dealers of many states in understanding what their farmer customers think and why they think that way when the subject of credit comes up.

Findings developed from a study of agricultural credit problems and practices conducted by the department of agricultural economics, North Dakota Agricultural Experiment Station, were summarized as follows:

- Farmers responding in the study were favorable to the use of agricultural credit. Ninety per cent believed credit could increase the profit and efficiency in their farming operations.
- About one third of the farmers in the study said they could not obtain all the production credit needed.
- One hundred eleven of the 337 farmers providing information reported intermediate term investments the most difficult to obtain.
- More than four fifths of the farmers in the study indicated a need for more information on how to obtain and use credit properly.
- Sources of production credit depended upon by these farmers were: Banks, 42%; Farmers Home Administration, 24%; Production Credit Assn., 16%, and "other sources," 18%.
- Eighty eight per cent of the farmers in the study felt lending practices and loan terms of some lending agencies could be improved; 60% felt interest rates could be lower; 32% felt excessive collateral was required by lenders, and 80% said the maximum amount lenders will lend was too low.
- Advice and supervision given by lenders needed improvement, according to 44% of the farmers.
- Slightly over half the farmers said they would have changed their farming operations if credit had been available.
- Preparation of annual farm plans as a basis for accurate determination of credit needs was suggested by two fifths of the bankers included in the study. Other improvements advised were careful planning and purchase of consumer goods, keeping of adequate farm records and analysis by farmers of farm costs, price trends and profit margins.
- Bankers included in the study considered farmers' knowledge of agricultural credit as being inadequate.
- Two thirds of the bankers said they were following the practice of making short term production loans with the understanding they could be renewed at maturity if intermediate terms were needed.

Donald E. Anderson, assistant agricultural economist, and George H. Coulter, former North Dakota graduate student, conducted the survey and investigated agricultural credit in the state from two viewpoints: That of the farmer and that of the commercial banker.

The first phase was designed to determine the credit needs and problems of farmers. A mail questionnaire was sent to 1,024 farmers during the summer of 1958. The return was 33%—337 completed schedules.

The second part investigated the operations of commercial banks in supplying credit to farmers. All 153 commercial banks in North Dakota received a mail questionnaire during the summer of 1958. Fifty-seven completed schedules were sent back to the investigators—a 37% return.

The results of the study appear in North Dakota Agricultural Experiment Station Bulletin 423, June, 1960.

The authors note that North Dakota farmers are using increasing amounts of credit in an effort to maintain an efficient farm operation. They were using about $133 million in credit on Jan. 1, 1954. Five years later, Jan. 1, 1959, North Dakota farmers were using $244 million in credit.

Of the total credit being used Jan. 1, 1954, about $54 million, or 41%, was production credit. Production credit increased to almost $80 million—or about one third of the total credit being used—by Jan. 1, 1959.

Banks Major Source

The 153 commercial banks in North Dakota are the major source of production credit for farmers in the state. Banks held over $39 million of the total production credit outstanding Jan. 1, 1954, and more than $54 million Jan. 1, 1959.

Credit outstanding to farmers in the state more than doubled in 10 years—1949 through 1958.

The survey included a question which asked farmers to indicate which loans they had the most difficulty in obtaining. Again, the need for credit to finance intermediate-term investments was emphasized by the farmers' replies.

Forty-two farmers listed loans for machinery purchase as the most difficult to obtain, while 38 farmers indicated building improvement loans and 25 operators said breeding stock loans. Feed, seed and fuel—lumped together in one "loan purpose" item—was mentioned 14 times as the most difficult for which to obtain loans.

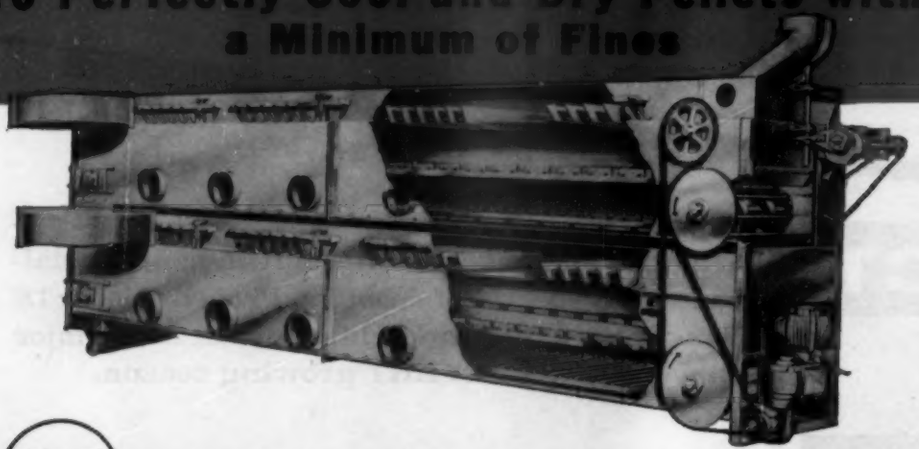
Printers' Ink Runs Article on Myzon

CHICAGO — How Myzon Laboratories uses its specialized segmented approach in the highly-specialized and segmented farm market was the subject of an article in the Sept. 23 issue of Printers' Ink, a weekly magazine of advertising and marketing.

"How well it works is indicated by growing sales of the specialized new products, all backed by concentrated campaigns aimed at market segments," said the article. "During the first half of this year, sales volume for Myzon's new livestock products (where profit potential is greatest) was running ahead of poultry products."

The article detailed the concentrated campaign behind Myzon's Super Iron Plus.

To Perfectly Cool and Dry Pellets with a Minimum of Fines



Wenger ROLLER CHAIN MODEL HORIZONTAL PELLET COOLERS

HERE IS WHY... The Wenger ROLLER CHAIN MODEL PELLET COOLER/DRIER has no equal in the field of cooling and drying pellets.

- Plenum chamber with adjustable louvers runs full length of each stage of cooler. This permits positive equalization of air movement through every square foot of belt area, and is not possible with any other cooler. Minimizes belt area required to do perfect cooling and drying job.
- Horizontal construction means all pellets get easy handling within cooler unit. They are properly dried. This means great reduction in fines. Variable speed drive permits adjustment of depth of bed to optimum for various sizes of pellets to be cooled. Cooling poultry pellets is relatively simple, and requires only a shallow bed of pellets. Cooling larger pellets, however, requires greater retention time in air stream since bound moisture is difficult to remove from the heart of a large pellet or range cube. This variable bed possible only in horizonal coolers.
- Wenger two stage horizontals (illustrated above) have plenum chamber and divider between lower and upper stages. This means that the driest air available is used to cool and dry pellets on both passes of coolers.
- Roller chain model (illustrated here) has ¾" transverse steel rods, is equipped with rollers, supported on angle iron rails, linked together on 4" centers with steel plates, chain driven over a serrated head pulley, equipped with special fines pickup on foot pulley, woven wire mesh screen with welded selvedge, belt take-up, fines collection system and oscillating pellet spreader.

TRY A Wenger

You'll Never be Satisfied With Anything Less.

Write today for illustrated booklet, specifying tons per hour in largest pellet handled.

SINGLE STAGE

Available in single stage (only 41" height makes it ideal for suspension from ceiling beneath pellet mill to eliminate that old headache of hot legs), or in two stage superposed coolers (at top) which discharge pellets immediately beneath pellet inlet. Both built in 10', 12', 14', 18', 24', 30', 40', 50' lengths.

Wenger Mixer Manufacturing
SABETHA, KANSAS · PHONE AVenue 4-2133
Standard of the Industry for Liquid Feed Mixing, Pelleting and Cooling Equipment

Feed nutrients
BLOMFIELD-SWANSON
MINNEAPOLIS

Cyanamid Assistant to Research Head Named

NEW YORK — Melvin C. Firman has been appointed assistant to the manager of research and development, agricultural division, and will report to Dr. J. T. Thurston, effective immediately, replacing Dr. J. H. Ware, who was recently promoted to director of the product research laboratories.

M. C. Firman

Prior to this new assignment, Mr. Firman was manager of technical service for the fine chemicals division. Before that, he was associated with the development of the use of antibiotics in foods and new antibiotic research.

He received his B.S. in bacteriology at the Philadelphia College of Pharmacy and Science in 1940.

Ohio State Schedules Marketing Conference

COLUMBUS, OHIO—The third annual Agricultural Marketing Conference, sponsored by the Ohio State University department of agricultural economics and rural sociology, will be held Dec. 8 at the Ohio Union Building on the campus of Ohio State University. The general theme of the one-day conference will be "Market Power in Agriculture."

This conference will highlight three nationally recognized speakers for the general morning and luncheon sessions. In the afternoon, the conference will be divided into commodity groups emphasizing problems in livestock, poultry, fruit and vegetable, dairy and grain, feed and farm supply marketing.

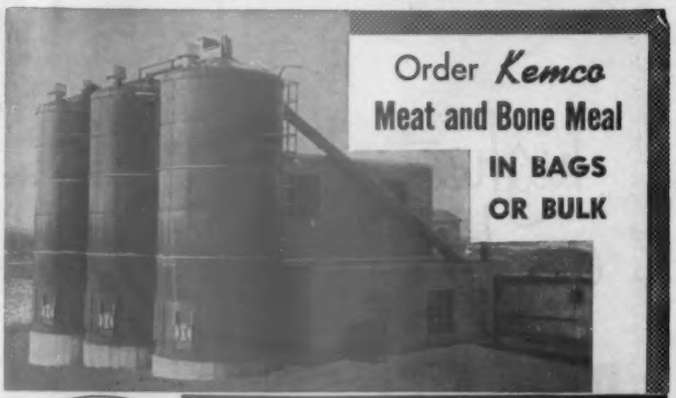
Featured speakers will include Robert A. Bicks, assistant attorney general in charge of the Justice Department's antitrust division in Washington. The topic of his address will be "Antitrust and Market Power in Agriculture."

Following Mr. Bicks on the program will be Dr. Kenneth Naden, administrative counsel for the National Council of Farmer Cooperatives in Washington. The topic of his address will be "The Importance of Market Power in Agricultural Marketing."

The luncheon session will feature an address by Dr. Theodore Beckman, Ohio State University, "Market Power in a Changing and Growing Economy."

After the noon session the group will divide into commodity areas for the balance of the program.

The section on grain, feed and farm supply marketing will feature two sessions. The first will be an address by D. M. Mennel of the Mennel Milling Co., Fostoria, Ohio, entitled "Market Power As It Affects the Ohio Grain, Feed and Milling Industry." His address will be followed by a panel discussion on "Meeting the Challenge of the '60's." This panel moderated by George Greenleaf, executive secretary of the Ohio Grain & Feed Dealers Assn., will include: Nelson Cotton, manager, Ohio Farmers Grain Corp., Fostoria, Ohio; Earl Davidson, manager, Craigs Elevator, West Liberty, Ohio; Don Vogle, Ralston Purina Co., Circleville, Ohio, and Robert McAlister, McAlister Grain Co., Columbus, Ohio.



KEM MILLING CO. Kemco MEAT & BONE MEAL ALWAYS UNIFORM • ALWAYS DEPENDABLE

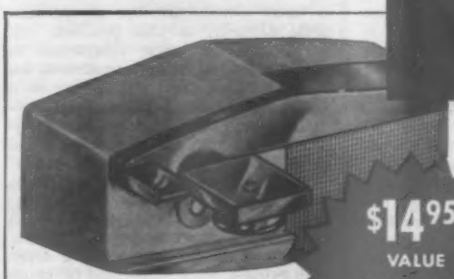
Kem Milling Co.
NEW BRIGHTON, MINN. • MELROSE 3-4411

BLATCHFORD'S '60 BONUS BONANZA!

EVERYONE CAN GET A BONUS!
these... plus other bonus prizes...

NEW BIG PRIZES on all products! You Get Them Now!

$69.50 VALUE Elgin Watches



$14.95 VALUE Automatic Can Openers

$12.95 VALUE Melmac Dinnerware Sets

NEW PROFIT OPPORTUNITY For Distributors and Dealers!

NOW Blatchford goes all out to make 1960 your biggest Blatchford profit year! Write today for details on this sensational new BONUS BONANZA Blatchford's has for you. See the Bonuses you make, *right now*. This is the BONUS everyone cashes in on right now!

DEALERS! DISTRIBUTORS!

WRITE NOW FOR YOUR BONUS BONANZA BROCHURE!

Blatchford's ESTABLISHED IN 1900
MAIN PLANT AND OFFICES
WAUKEGAN, ILLINOIS
Midwest Plant • Des Moines, Iowa.
West Coast Division • Hanford, Idaho

Blatchford Calf Meal Co.
Waukegan, Illinois—Dept. 2110

YES! Please RUSH to me the Blatchford '60 BONUS BONANZA Brochure that shows BONUS PRIZES I get right now!

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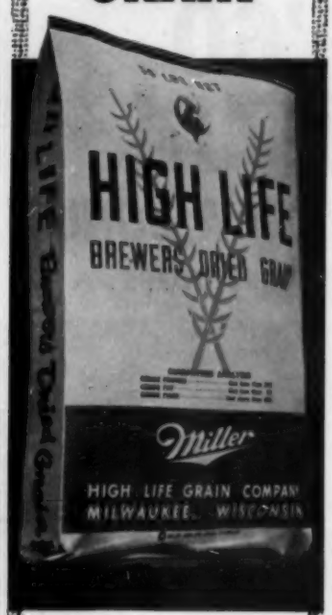
Pilch Females cross bred with leading male lines means profits.

Pilch's POULTRY BREEDING FARMS, INC.
General Offices and Research
HAZARDVILLE, CONNECTICUT
Distribution Centers
Smithfield, N. C. • Talladega, Ala.

highest quality

BREWER'S GRAIN



high protein!

Guaranteed not less than 26% crude protein.

convenient!

Packaged in attractive, clean, sturdy, 50-lb. bags with handy tear off tops. Easy to handle and store. Also available in bulk.

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Milwaukee, Wisconsin

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Exclusively distributed by:

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Phone: Yards 7-1003

Texas Feed Mill Adds Equipment To Produce Protein Blocks

By Martin Newell
Feedstuffs Staff

LEFT—This view of the Wieser Mill shows the addition recently completed to house the firm's new protein block manufacturing unit and provide additional warehouse space. The truck loading dock for protein blocks is shown at the near end of the building.

RIGHT—Sidney Wieser, right, general manager, and his brother, Vincent, production manager, discuss a milling problem beside a pallet load of the firm's new protein blocks.

One of the nation's most complete feed mills has now added the newest facet to feed manufacture—equipment to produce protein blocks. The Wieser Mill, Inc., Lampasas, Texas, is spending about $100,000 on a separate unit for protein block output, utilizing a new, automatic Landers press, the first of its kind to be put into operation. Production began Oct. 3.

The protein block business is not wholly new. Several firms have been making this product in the past few years, and minerals and whey have been put up in this form for quite some time. (An article telling of the "minor revolution" created by protein blocks in range cattle feeding practices of the West appeared in the Oct. 15 issue of Feedstuffs.)

But, in a general sense, the protein block business has "grown up" primarily in the past year or two, and many people in the range feed trade believe it is certain to become a more important factor in feeding in the years ahead.

One of these believers is Sidney Wieser, general manager of the milling firm, and he is backing his judgment with the addition of this new unit in his feed milling operation. Like many other southwestern feed men, the Wiesers bought protein blocks from other producers to sell under their own brand name for some time past, and thus have had an opportunity to test the protein block market from sales experience.

When Mr. Wieser decided to go into the production side of the protein block business, he did so with the conviction that the relatively good margins that exist today on protein blocks during the early "sellers' market" stage of development would not continue indefinitely. He reasoned that when the inevitable competitive phase of market growth was reached, the mill with the greatest efficiency of production and lowest cost of operation would be the one best able to survive and make a manufacturing profit. For that reason, the emphasis in the design and construction of the new unit has been placed on operating efficiency and not on the lowest possible capital investment.

This meant a separate unit, since Mr. Wieser feels that it is impossible to get this production efficiency by trying to cut a protein block operation into an existing conventional feed milling operation. There are too many obstructions, slow-ups and bottlenecks in trying to run everything through the same machinery. Under these circumstances, both the regular product line and the block production are likely to suffer. Furthermore, Mr. Wieser does not look on the protein block operation as a seasonal one, as many mill operators might. He aims to make range blocks the year around, and when sales fall off during the good grass season, he has provided space for an inventory build-up that will house an ample backlog to take care of rush business in the fall and winter.

Mr. Wieser also envisions some block potentialities that are not now in use. For example, he sees possibilities in a range block for turkeys. And he points out that in large-scale, mechanized dairy operations, the cows spend so little time in the milking barn that it is often difficult to get them to eat a sufficient amount of dairy concentrate for top production. Already, in this problem, experiments are being conducted in California with vending machines, set up in the dairy lots, which expose a single feed block at a time to the animals. When that is consumed, another block automatically slides into its place.

These and other production factors and growth expectations were behind Mr. Wieser's thought when he called on Hayes & Stolz Mill Mfg. Co., Ft. Worth, to design and set up a separate protein block unit. And he chose the new Landers Block-Matic press for the key piece of equipment because of its flexibility, speed and its automatic cycle features which eliminate hand operation.

Since there is no waste space—or waste of anything—around a Wieser plant, the addition of a new unit had to start with a new building. Besides space for equipment, additional warehouse and loading facilities were desirable for the new protein block operation, so a 50 by 200 ft. building was planned, adding 10,600 sq. ft. of space and doubling the floor area of the milling plant. The building is steel clad, steel frame construction on a concrete slab which is "loading dock high," about 4 ft. above ground level.

One end of the new building abuts and connects with the older mill building, and the production operation is concentrated there. At the opposite end is a truck loading dock and shed, while there are carloading outlets on the side of the building that adjoins the railroad tracks. A basement area is provided below the milling end of the building. Typical of the perfection going into this operation is the lighting system, which employs expensive mercury vapor lamps which give a daylight brilliance to the production area, a very rare situation in a feed mill.

11 Bulk Bins

Ingredient supplies are drawn out of 11 bulk bins. Seven of these bins were already built and employed for storage of ingredients used for other feeds. Four new bins were added of special heavier construction to hold 100,000 lb. each of heavier mineral materials such as salt, bone meal, dicalcium phosphate and limestone.

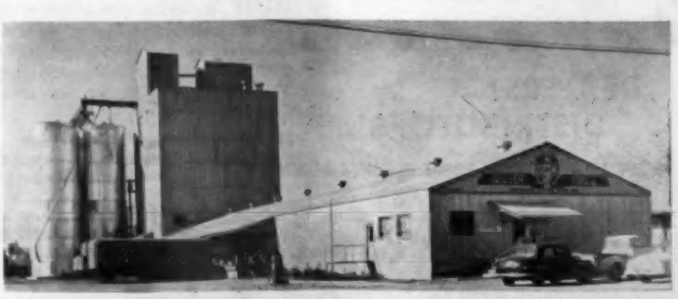
The ingredients move by screw feeders to a Hardy automatic weigh scale, then to a Hayes & Stolz one-ton horizontal paddle-type mixer, which was designed specifically for the mixing of mineral and protein block mash feeds prior to the blocking process. This is a heavy duty unit, and the design of it was the result of several years of working with mineral and protein block manufacturers.

At this point, the molasses is applied directly into the batch mixer, and the feed material then moves to another Hayes & Stolz blender for final mixing to get a thorough distribution of the molasses, an important and "touchy" material in block production.

The molasses supply comes from the present feed mill and operates from a central pressure line. It is tied into the automatic Hardy system for metering molasses into the batch in exact amounts. Mr. Wieser draws molasses from this pressure line system for his regular dairy feed mixes and also each of his two pellet mills.

The feed is then elevated to a holding bin of 4,000-lb. capacity, which is located above the block press. This holding bin has an agitator for facilitating smooth discharge. The feed descends to a Richardson 3GGG 1½ cubic ft. scale and then drops into the molding area of the Landers Block-Matic press, where it is formed into the blocks which discharge onto a wrapping table.

The complete mixing operation is tied in to a Hardy control panel, which can be set to control automatically the entire flow of ingredients from storage bins through mixers to the holding bin. This control panel is



MILL EXTERIOR—This is a view of the office, warehouse and main plant of the Wieser Mill, Inc., Lampasas, Texas. Built in 1954, the mill has a capacity of about 100 tons per eight hours. The new protein block unit is located in another new building on the other side of the mill.

CONTROL CENTER—Sidney Wieser, general manager, views the control center which will guide the production line on the firm's new range protein block production unit which opened early in October.

BULK DELIVERY—Bulk delivery is an important part of the Wieser Mill output, and units like this one carry feed to the firm's customers in central Texas.

built so that another production line can be added later, if it becomes necessary to put in an additional press.

The 75-ton Landers Block-Matic press is built on a 45° angle, which enables automatic loading from the scales through a feed chute and into the molding chamber of the press. The ram then compresses the material, exerting a pressure of 150,000 lb. on the block. After a few seconds of maximum pressure, the moulding chamber releases the block which is discharged by gravity on the same 45° plane sliding down to a wrapping table. Then, the cycle automatically begins again.

Nine-Second Cycle

The Landers press has a cycle time of nine seconds, with a device for holding maximum pressure for any length of time desired. With normal blocks, the machine can produce 300 blocks per hour (5 per minute), but if it becomes necessary to handle materials hard to compress, the machine can be slowed to only one cycle per minute. There also is a three cycle per minute speed.

The moulding chamber of the press is 8½ by 8½ inches with 45° corners 1 in. across to apply a bevel to the blocks. The ram likewise carries a bevel projection. The machine is manufactured with a 15½-in. molding chamber that can be changed easily. Since the press is cycled by pressure alone, the length of the blocks can be varied. Normally, a protein block is made which measures 8½ by 8½ by 11⅛ in. and weighs approximately 33⅓ lb. Mineral blocks commonly run 8½ by 8½ by 11 and weigh 50 lb.

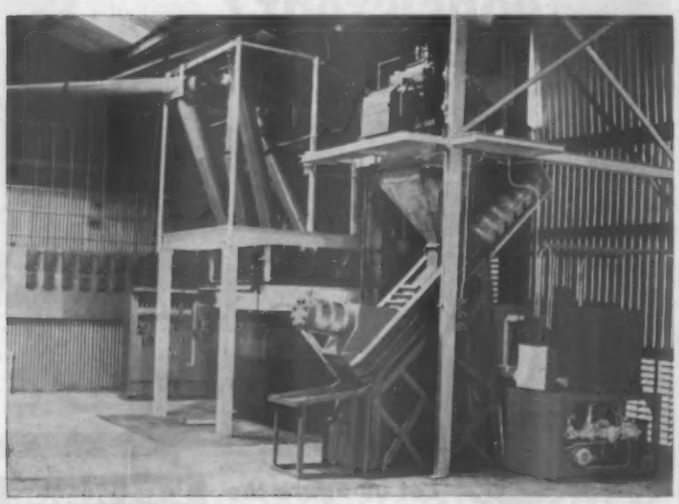
The degree of hardness of the block can be controlled by the amount of pressure exerted by the press, and this can be varied. When it comes to hardness of protein blocks, there are all kinds of opinions. And this is an important part of the manufacture. If the block is too soft, it will not stand rough handling and, furthermore, the animals will eat more than they should of the material each day. If the blocks are too hard, they will not get enough feed. Furthermore, the block can be so hard that the animals will wear away their teeth. This is particularly true for sheep which break their front teeth on too solid blocks.

The Wieser block is made to feed either cattle or sheep, and so it is kept soft enough for the latter animals to eat without injury. One test for hardness that is sometimes used is simply sticking a knife in the block. If the metal penetrates with about the right degree of pressure, the hardness is correct. The blocks also carry a rather high salt content which helps control the consumption rate.

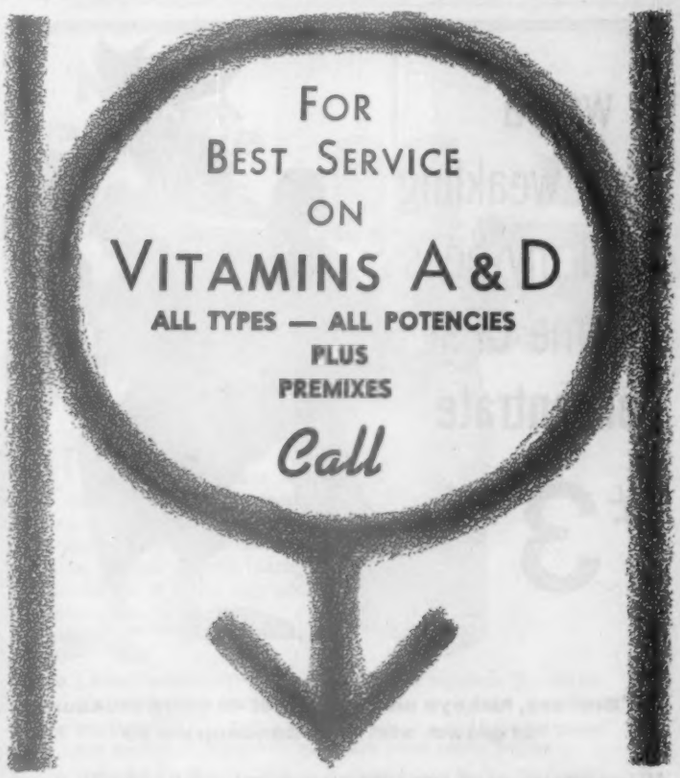
The blocks slide from the press to a wrapping table, where they are covered with a sheet of paper, sealed at the edges and the ingredient label pasted on. The blocks are stacked on pallets, and a fork lift truck carries them to the warehouse location or the loading area as desired. Some storage time for blocks is preferred for "curing" which gives the block an opportunity to harden a bit. So, adequate warehouse space was needed for this and also for storage to meet seasonal sales variations. Mr. Wieser thinks he might carry an inventory of 1,000-1,500 tons.

Little Shrinkage, Breakage

Mr. Wieser feels that with proper experience, the press operation and wrapping can be done by one man, although two are now used for this purpose. The cost of producing a block cannot accurately be estimated now, because the operation is too new and operatives untrained, but, at full production rates, it should not run very high on this automated operation. So far, there has been very little shrinkage or breakage in the blocking operation, Mr. Wieser says, and the press has been very accurate in turning out blocks of the proper weight and shape. The critical point, Mr. Wieser feels, is in having the right feed ingredients in proper ratio and proper condition to yield a smooth flowing operation. And this,



HYDRAULIC PRESS—This is a view of the new Landers Block-Matic hydraulic press which forms protein blocks in the new unit recently added to the plant of Wieser Mill. This is the first installation of this completely automated feed block press. Beyond the press is the receiving bin above the batch mixer in the basement; beyond this is the Hardy automatic scale setup, which controls the flow of ingredients through the entire unit.



PRESENTS SLIDES—Charles Harris, right, Burrus Mills, Inc., Ft. Worth, Texas, treasurer of the Midwest Feed Manufacturers Assn., presents to Dr. G. M. Watkins, Texas A&M College, a set of slides and sound track for the association's new education presentation "Opportunity Knocks at Home Plate." The slides were shown at the recent Texas Nutrition Conference at College Station. The slides stress the varied types of careers available in the feed industry and cite the importance and value of college agricultural training. Each set of slides includes a presentation on the agricultural college of the state in which it is shown.

he says, requires plenty of experience to determine.

Currently, protein blocks are selling in the Lampasas area at $1.50 a block or about $90 a ton. At a feeding rate of 1½ lb. per day, the feeder generally puts out enough blocks for the length of time he desires between feedings. Normally, this is one block to five head of cattle or one block to 10 head of sheep.

This new addition gives the Wieser Mill a completeness seldom found in feed manufacture, since the company also produces all other types of feeds for chickens, turkeys, rabbits, dairy cattle, beef cattle, sheep, horses and dogs. The company's regular feed plant which has a capacity of approximately 100 tons per eight hours, is a widely known model of efficiency and low cost production, being a push button operation practically all the way through. Some of the regular mill operations have been recorded in a motion picture which has been viewed by quite a few feed manufacturers.

This plant, designed by Sidney Wieser, was engineered by Hayes & Stolz, being completed in May, 1954, just 11 months after the firm's previous mill at Hamilton, Texas, had burned. It was decided to rebuild at Lampasas because of the better railroad facilities there.

All grains and ingredients are handled bulk from truck or car either into the overhead mixing bins or into bulk storage tanks. All the mixing bins are controlled by pneumatic air valves with the controls to operate them located at a center along with the starter buttons for the control of the mixers, elevators and cleaners. This makes it possible for one man at this center to do all the mixing and control the flow of the finished mixes.

There are two CPM Century 75 pellet mills, one operated by diesel motor and the other by electric motor. From the pellet mills the feed drops into the cooler below, and then is conveyed either to nine sacking bins, which hold approximately 25 tons each, or to the crumble rolls under the cooler to be crumblized before moving to sacking bins. Four of the sacking bins are so situated that the feed in them can be packed off in sacks or, by changing a valve, can be directed to the loading dock and into bulk trucks.

Packaging Scale

The plant is equipped with a Richardson automatic packaging scale capable of turning out 14 50-lb. sacks a minute. The scale equipment will handle a wide range of sizes and types of feed. Packing is done on a Bemis conveyor system equipped with a Union Special sewing head. A conveyor belt carries the sacked feed to the adjacent warehouse for loading or storage.

There is also a sweet feed unit. Feed from the mixers can be conveyed to bins over the sweet feed

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mixer for the addition of molasses. There is another Richardson automatic molasses scale under the sweet feed mixer which weighs and sacks the molasses mixes. Hen scratch and chick scratch are mixed automatically out of storage bins equipped with percentage feeders and then conveyed to the bag packers.

There are grain storage bins over the two hammermills, the crimping rolls and the chopper rolls. Grain flows into these by gravity and is elevated to the top of the mill to flow by gravity also into the mixing bins or sacking bins as desired. By handling everything possible with gravity flow, initial cost and maintenance have been cut to a min'mum.

In addition to the extensive storage inside the mill, outside storage consists of six Butler hopper bottom tanks of 15,000-bu. capacity and three Butler flat-bottom bins of 47,000-bu. capacity each.

The Wieser Mill, Inc., is the outgrowth of a family business of long standing in central Texas, originating in a flour mill at Hico, which was established by J. F. Wieser in 1891. Later, other mills were added at Dublin, Stamford, Hamilton and Waco, and elevators were established at several other towns in the area. This business continued under the direction of the late H. M. Wieser, who operated the plants at Hico and Hamilton, with headquarters at the latter place. Over the years, the business changed from flour to formula feed.

H. M. Wieser died in 1951, but prior to his death, his son, Sidney Wieser, entered the business and has been general manager since 1940. Another son, Vincent Wieser, is production manager.

SALESMEN HONORED—The six Master Mix salesmen who were named to the Wildcat Club at the 26th annual sales convention of McMillen Feed Mills division of Central Soya Co. recently at French Lick, Ind., are shown here with Dale W. McMillen, founder of Central Soya: Back row, from left, William F. Pickett, Jasper, Ind.; Mr. McMillen, and Andrew J. Roberts, Jr., Galion, Ohio; front row, from left, D. Eugene Michael, Russellville, Ala.; Tony R. Kent, Fithian, Ill.; Paul Homan, Ligonier, Pa., and Herbert L. McClure, Hanoverton, Ohio.

McMillen Feed Mills Holds Sales Meeting

FRENCH LICK, IND.—The "Man of the Year" award and 25-year service awards were given out and six salesmen were named to the Wildcat Club at the 26th annual sales convention of the McMillen Feed Mills division of Central Soya Co. recently here.

Herman Von Guten, field engineer in Central Soya's engineering department at Decatur, Ind., received the "Man of the Year" award from Dale W. McMillen, founder of the Central Soya Co. Mr. Von Guten was selected on the basis of "ability, an inquiring mind, character, humility and determination."

The 25-year service award, a gold, engraved wrist watch, was presented to four 25-year veterans. Harold W. McMillen, Central Soya board chairman, presented watches to Edward T. Schele, secretary and treasurer; W. E. Huge, vice president; Eural G. Rose, assistant controller, and Donald L. Ray, salesman, all of Fort Wayne, Ind., but Mr. Ray, who is from Alliance, Ohio.

The six Master Mix salesmen who were named to the Wildcat Club and presented awards for outstanding accomplishments during the past year were: William F. Pickett, Jasper, Ind.; Andrew J. Roberts, Jr., Galion, Ohio; D. Eugene Michael, Russellville, Ala.; Tony R. Kent, Fithian, Ill.; Paul Homan, Ligonier, Pa., and Herbert L. McClure, Hanoverton, Ohio.

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Production Efficiency Stressed At Maryland Feed Conference

By WADE H. RICE
University of Maryland

COLLEGE PARK, MD.—Efficient production of beef, pork, milk products, poultry and eggs through advanced techniques in feeding, breeding, mechanization and over-all management of farm animals was the general theme of several talks presented during the recent Feed Service Conference conducted at the University of Maryland.

Conference participants said:

- Most evidence supports the conclusion that feeding has little to do with dairy cow udder trouble when an adequate ration is fed.
- Meat-type hogs are a result of breeding, not feeding; but feeding is important.
- The term "meat-type steer" is working its way into the vocabulary of animal agriculture spokesmen.
- Some predictions say dairy farms will become so specialized that some farmers will do nothing but buy calves and raise replacements.
- Mechanization of poultry and egg production has reached the point of more money being invested in equipment than in housing.

(These observations are in addition to those which appeared in the Oct. 8 issue of Feedstuffs which summarized other Maryland Feed Service Conference talks.)

MEAT-TYPE HOGS—One of the biggest problems confronting the feed industry in the area of swine is, in the opinion of Dr. James R. Ferguson, Maryland livestock extension specialist, "the lack of efficient, vigorous, meat-type hogs that will respond to high quality feeds and will demand and receive a premium at the market."

He advised feed men to guide their patrons "down the path of swine selection." Meat-type hogs, he said, "are a result of breeding, not feeding; but feeding is important."

Research results cited by Dr. Ferguson indicate that hog producers can reduce the amount of fat, increase the amount of lean and improve feed efficiency by holding protein constant and reducing the daily calorie intake to 80% of full feed.

MASTITIS CONTROL — "Nutrition-wise the feed serviceman should advise the dairyman that most evidence supports the conclusion that feeding has little to do with udder trouble when an adequate ration is used," said Dr. James D. Kornder, Maryland Livestock Sanitary Service Laboratory.

He said the danger of over-emphasizing the effect of a ration upon mastitis is "to divert the dairyman's attention away from a complete mastitis control program, which involves adequate management coupled with bacteriological culture, followed by treatment and vaccination on a herd basis."

Dr. Kornder supplemented his formal remarks with several comments during a "Stump the Experts" question and answer period.

He added that high protein feed (18-20%) and high grain feeding (3 to 1) are helpful in controlling mastitis. "Good nutrition always increases the resistance of an animal to disease," he said. "Some antibiotics added to feed would doubtless aid in controlling mastitis. However, residues in the milk are to be reckoned with in this type of treatment and may serve to eliminate some antibiotics."

REPLACEMENT HEIFERS — Results of several studies discussed by Dr. R. W. Hemken of Maryland's dairy department show that overfeeding of dairy heifers is expensive and produces animals which are fat.

"Their milk production is generally slightly below that of heifers fed at a more normal rate," he said. "Other reports have stated that overfeeding produces a heavy, coarse conformation and a poor quality udder."

Talking about underfed heifers, Dr. Hemken noted that these animals reach sexual maturity much later and are small at calving time unless breeding is delayed. "If they are calved out at a small size, extra feed is needed during the first lactation to promote good growth."

In the future of raising dairy heifers Dr. Hemken sees the possibility of dairy farms becoming so specialized that some farmers will base their business on the single job of buying calves and raising replacements.

"However, at the present, the good dairyman probably will have the most satisfactory replacements available if he does a good job of raising his own replacements," Dr. Hemken noted. "Other factors such as automation and pelleting undoubtedly will play a part in mapping the direction the commercial dairyman will take."

BEEF CARCASS YIELDS — Here are the goals which Boyd T. Whittle of Maryland's animal husbandry department said a number of leaders in the beef cattle industry have suggested for producers of the "Steer of Tomorrow":

A choice grade, 1,000-lb. yearling slaughter steer that will:

1. Have a dressing percentage of 60.5% or higher.
2. Have a loin eye of 2 sq. in. per 100 lb. of carcass weight.
3. Have a uniform fat covering of not more than 0.15 in. per 100 lb. or carcass weight when measured at the 12th rib.
4. Will produce over 40% of the carcass in "retail trimmed" loin, rib and round cuts.

Mr. Whittle said such an animal—approaching an attainable ideal in conformation, quality and market-

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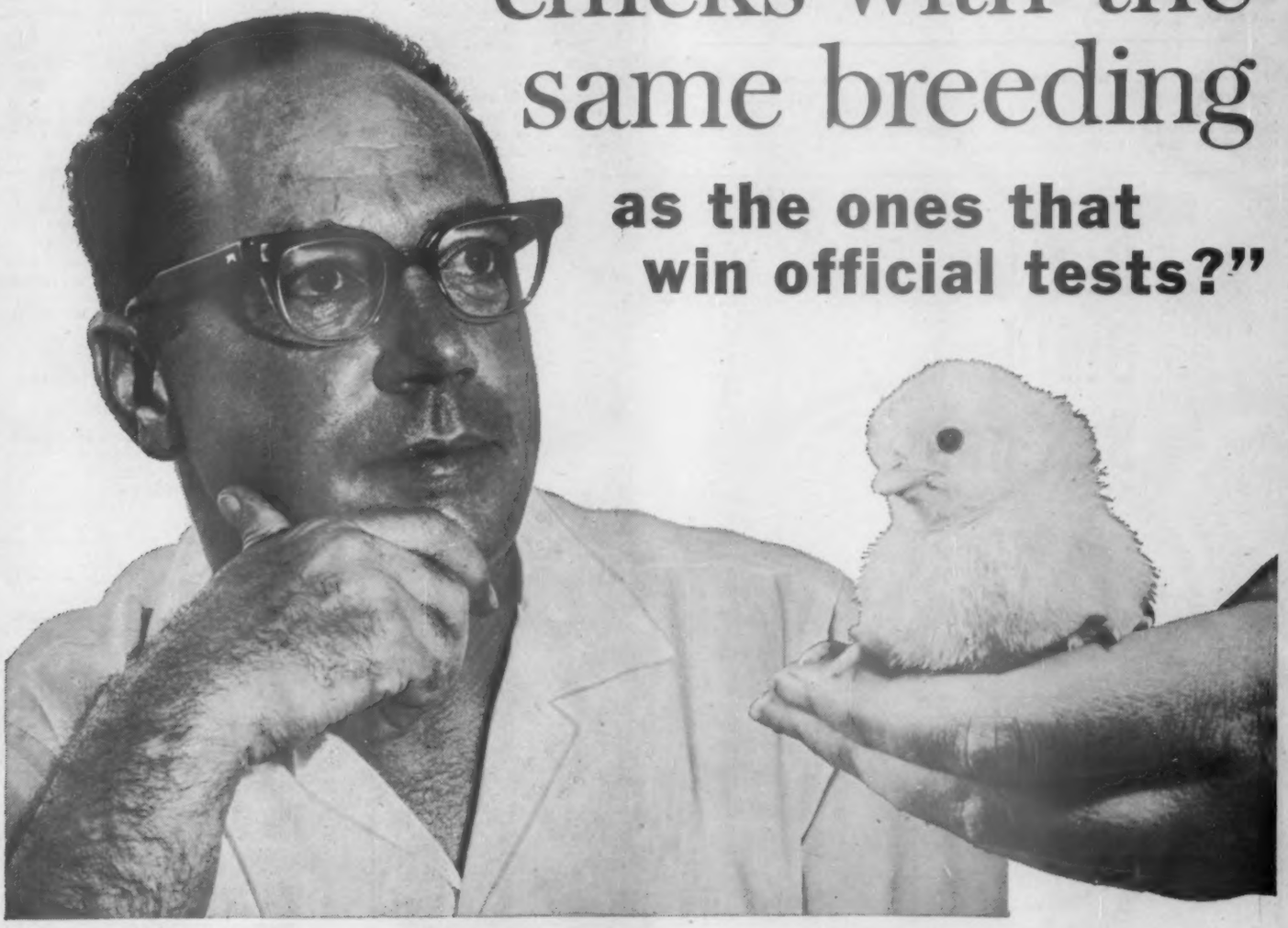

Answer:

The Hy-Line chicks you buy this year will actually have better breeding than those that gave superior performance in official Random Sample Tests. And as you may recall, Hy-Line 934 Series layers in the official tests ending in 1958 and 1959 averaged 55¢ more income per bird over feed and chick costs than the average of the 9 next largest-selling birds. By crossing highly inbred lines, Hy-Line geneticists are able to produce millions of birds of practically identical breeding. This year's 934 Series layers will be even better than those that performed so well in the 1958 and 1959 Random Sample Tests. It's another reason for you to recommend that your feed customers make their next brood Hy-Line chicks.

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Des Moines, Iowa

AN EASY WAY TO IDENTIFY CROTALARIA

WASHINGTON—A new method of identifying crotalaria seed—found to be toxic to livestock and poultry—in contamination-suspected feed was uncovered here at the recent annual convention of the American Association of Feed Control Officials.

The method, explained by G. M. Barnhart, chief chemist, Missouri Department of Agriculture, was developed by E. E. Brown, state chemist with the Texas Agricultural Experiment Station, from an idea he brought to the U.S. from Israel after a visit there.

Here's the procedure:

1. Make a mount of the feed sample to be checked.

2. Add a few drops of mounting media to the sample.

3. Mix equal parts of distilled water, glycerine and chloral hydrate.

4. Add a few drops of the mixture to the mounted sample and let it stand untouched for a few minutes.

5. Add 1-2 drops of 1:6 hydrochloric acid.

Any crotalaria seed present can be spotted easily, because the hull fragment of the seed turns pink. No other material in the sample will take on the color.

ability—has been referred to as a "meat-type steer."

It was Mr. Whittle who said during the "Stump the Experts" session, "Materials now on the market for tenderizing meat are both feasible and practical, but they should be used strictly according to manufacturer's directions. And, attention to producing a tender, high quality meat may be a more satisfactory approach for the producer."

AGRICULTURAL MECHANIZATION—A. V. Krewatch, extension agricultural engineer, noted that poultry mechanization is reaching a high level. "More is invested in equipment than in the shelter," he said. "Management and good equipment are doing the job. Even eggs are now being gathered, cleaned, graded and packed on trays mechanically."

Estimates by Maryland's poultry department, he said, indicate that eastern poultrymen are producing 2½ lb. of broiler per minute based on an eight-hour work day per man.

Mr. Krewatch related also that Iowa State University says it's possible for hog farmers to produce 5 lb. of pork per minute on an eight-hour-day basis. And, the University of Minnesota reports that the efficiently mechanized dairy farm is producing a quart of milk per minute for 100 cows per man per eight-hour day.

New Bulk Material Railroad Car Reported

MILWAUKEE, WIS.—Kurth Malting Co. here and the Pullman-Standard Car Mfg. Co., Chicago, have developed a new bulk material, covered hopper railroad car that can be unloaded from either end or both ends simultaneously, instead of from the bottom.

Equipped with twin outlets at both ends, the car also can be unloaded from individual hopper outlets on top of the car. Nicknamed the "Kurth Kar," it is designed primarily for pneumatic unloading, but also is equipped for gravity unloading.

The car is completely closed and impervious to dirt, rain, snow, etc., and is 100% self cleaning, the firm says. Other features include no angles where grain or malt can lodge.

A prototype car, leased from a Pullman subsidiary is undergoing final testing in the handling of grain and malt at various breweries. The unit was developed in close collaboration by the research departments of Kurth and Pullman-Standard, and is described as a significant step forward in bulk material handling.

Officials of Pullman-Standard said that the end unloading feature would be offered on all its standard covered hopper cars up to 3,500 cu. ft. in capacity.

Nutrena Feeds Names Sales Supervisor

BROOKINGS, S.D.—Appointment of Paul A. Suomala, Frazee, Minn., as Nutrena Feeds livestock and turkey feed sales supervisor for eastern North Dakota and northeastern South Dakota has been announced by Robert O. Pape, district sales manager here.

Mr. Suomala will headquarter in Fargo, N.D., servicing Nutrena livestock and turkey systems and providing in-the-field consulting service to area farmers and poultrymen, Mr. Pape said.

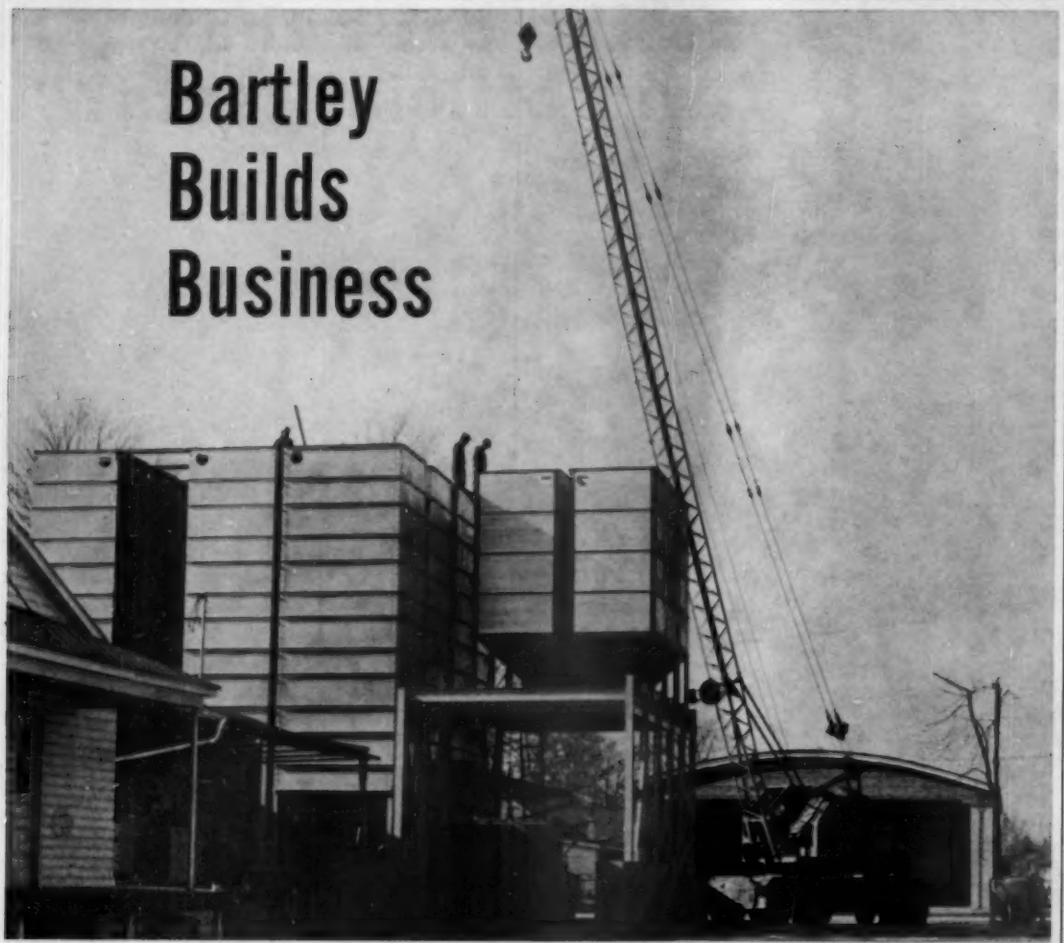
Mr. Suomala was graduated from the University of Minnesota in 1959 with a major in agricultural science.

On European Tour

OELWEIN, IOWA—George Norman, southeast Iowa division sales manager for the Oelwein (Iowa) Chemical Co., Inc., is a member of a group of about 50 persons which recently departed from New York City for a 17-day tour of five European countries. His sponsor is OCCO Feeds.

The main purpose of the overseas trip is to find out how producers and packers in Sweden, Germany, England, Denmark and Ireland go about breeding, feeding, handling and marketing swine.

Arrangements for the tour were made by Hogcast, a special publication issued by Farm Journal, Inc.

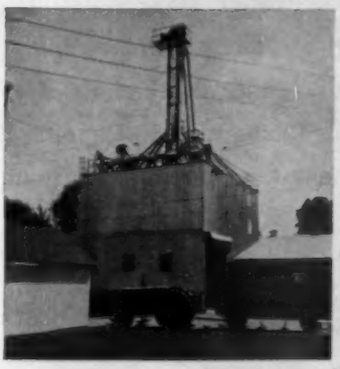


with bulk feed handling facilities by Fitzpatrick

Bartley's Store, Inc., Ireland, Indiana, is successful in its feed milling, farm supply and poultry enterprises because efficiency is a must with the company's management. Lawrence Bartley, President, early realized the need to switch from bagged to bulk feeds and to accomplish this task called upon Fitzpatrick to design, manufacture and erect new facilities, utilizing as much of the old as possible.

Ten 15-ton ingredient bins were installed through the roof of one bag feed warehouse, along with four 2000 bu. corn storage bins, and ten 10-ton elevated bins for loading finished feeds into bulk trucks. New mixers were installed along with a grinder Bartley had in use. A batch scales was added, as was a modern conveying system. A track hopper car unloading system was installed at nearby Jasper, Indiana, where Bartley receives concentrates.

Efficiency pays off and Bartley's new facilities have led to profitably increased feed sales. Perhaps you are considering mill modernization or expansion for more efficient operation. If so, it will pay you to talk with Fitzpatrick! Write for brochure today.



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Lady Motorist: I want a glass of water in the radiator, a teacup of oil for the crankcase and a pint of gasoline. I think that will be all.

Attendant: Couldn't I cough in your tires?

◆ ◆ ◆

Sonny Boy: Mama, daddy wouldn't murder anybody, would he?

Mother: Why certainly not, sonny, what makes you think he would?

S.B.: Well, I just heard him down in the cellar saying, "Let's kill the other two, George."

◆ ◆ ◆

A retired farmer moved to the city. On the first morning in their new home his wife said, "Pa, it's time you got up and started the fire."

"Not me," he exclaimed. "We might as well start right now getting used to all the city conveniences. Call the fire department."

◆ ◆ ◆

Second: "Well, old man, I'm afraid you're licked now."

Boxer (gazing dizzily across to opposite corner): "Yeah, I shoulda got him in the first round when he was alone."

◆ ◆ ◆

The little old lady had broken her ankle some weeks before and was greatly relieved when the doctor finally removed the cast.

"There," he said, "now you can walk up and down stairs again."

"Thank goodness," said the little old lady. "It was getting awfully monotonous shinnying up and down that drainpipe."

◆ ◆ ◆

Student: "Is waterworks all one word, or do you spell it with a hydrant in the middle?"

◆ ◆ ◆

"Open the door."

"Can't. Don't have a key."

"Great Scott, man. What'll you do in case of a fire?"

"Just won't be able to go."

◆ ◆ ◆

"Why did you strike this man?" the judge asked the prisoner up before him for assault and battery.

"It was this way, your honor," answered Pat. "He told me he was Irish by descent and I couldn't stand there and let any man say he had to come down to be Irish."

◆ ◆ ◆

Sonny: "What does the Chaplain of Congress do, Daddy?"

Daddy "Oh, he just gets up on a platform, looks at Congress, and prays for the country."

◆ ◆ ◆

The Sunday school class was composed of two-year-olds. The teacher was reviewing last Sunday's lesson. She asked: "Do any of you remember who St. Matthew was?" There was silence. "Well, does anyone remember who St. Mark was?" Still there was no answer. "Surely some of you must remember who Peter was!" The little faces were full of interest, but the room remained quiet. Finally a tiny voice from the back of the room: "I fink he was a wabbit."

◆ ◆ ◆

Office-Boy (nervously): "Please, sir, I think you're wanted on the phone."

Employer: "You think! What's the good of thinking?"

"Well, sir, the voice at the other end said, 'Hello, is that you, you old idiot?'"

◆ ◆ ◆

A Washington matron once boasted she could make President Coolidge talk. Cornering him at a dinner, she thought to make good her boast.

"Oh, Mr. President," she said, trying to disarm him with frankness, "I have made a bet that I can make you say at least three words."

"You lose," Coolidge replied.

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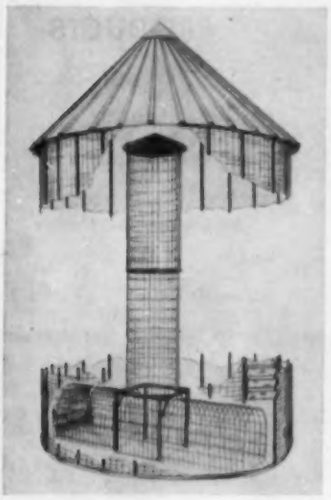
DESCRIPTIONS OF NEW AND IMPROVED PRODUCTS AND SERVICES PROVIDED BY MANUFACTURERS AND SUPPLIERS ARE PRESENTED IN BRIEF FORM. FOR ADDITIONAL INFORMATION, PLEASE USE THE ACCOMPANYING COUPON.

No. 7173 Grain Storage Equipment

Walsh Manufacturing Co. announces developments in its line of grain storage, drying and conditioning equipment. Included in the developments is a line of steel vent tubes and drag tunnels for use in round steel cribs. According to the company, the tubes and drag tunnels are quickly and easily erected. They are made of heavy-duty two gauge steel, with the tubes of 2 in. by 4 in. mesh and the tunnels of 2 in. by 6 in. mesh. Tubes are 20 in. in diameter and have a 24 in. diameter spreader cone on top of the tubes. A "T" ring eliminates tipping and telescoping of the tube, the company says. The company also announces a combination grain storage, dryer and conditioner that features the "Eaton" steel bin and "Lennox LP" gas heat unit and fan. For more information, check No. 7173 on the coupon and mail.

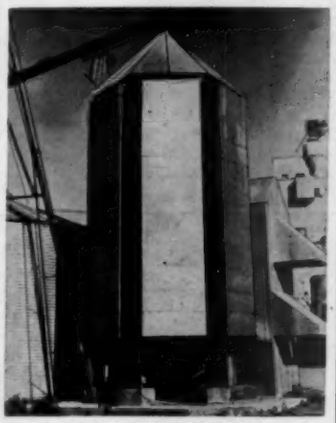


No. 7172—New Coccidiostat

A new coccidiostat—named amprolium and trademarked "Amprol", has been announced by Merck & Co., Inc. According to company literature, the product works by creating a vitamin B_1 deficiency in the parasites causing coccidiosis, literally starving them to death. At the same time there are no adverse effects on the chicken, the company says, because the B_1 requirement of the parasites is much higher than that of the chicken. The drug was tested in the laboratory against 44 strains of seven species of coccidia that infect chickens. The drug, the company says, shows promise of continuing efficacy against the various species of coccidia. Special tests have shown no significant development of resistance to the product in many strains of coccidia after repeated life-cycle exposures. For more information, check No. 7172 on the coupon and mail.

No. 7175—Grain Dryer

A seven-sided, continuous flow, automatically controlled grain dryer is being introduced by Figley Cox, Inc. The unit, called "Hepta", features no hot or cold spots, even flow of air, steel wire mesh grain columns, special safety controls and automatic loading and unloading controls, the company says. Corn, wheat, milo, oats, rice, soybeans or peanuts enter the garner bin by auger and flow continuously by gravity into six 7 in. grain columns. The seventh column introduces heated and cooled air. A steel wire mesh forms the grain columns allowing about 37% more open space than most perforated metals, the company says. All heat produced by the burner is channeled direct by two 36 centrifugal fans using a 7½ h.p. motor through the grain in the upper half of the columns. A cold air fan, operated by a 7½-10 h.p. motor. channels cold air to the lower half of the column. Bin capacity is 125 bu. For details, check No. 7175 on the coupon and mail.



No. 7174—Auger Molasses Mixer

A bulletin containing information about an auger molasses mixer has been released by the Pacific Molasses Co. According to the literature, the auger mixer is a simple trough elevated to 35° with an auger to carry and mix the feed. The bulletin gives tips on setting up an auger mixer unit. Other sections in the bulletin tell how to mix feed in the auger, prices and general facts. For copies, check No. 7174 on the coupon and mail.

No. 7176—Auto Advertising Device

Travelads, Inc., announces a cartop billboard of weathervane construction. According to the company, the sign moves with the slightest breeze, even when the car is parked. It fits any hardtop auto and can be mounted or removed in 40 seconds, converting a social car into a business-booster without any bolts or screws. Nothing will hurt the car's finish, the company says. One double face masonite panel provides 540 sq. in. of advertising space, which can be painted or lettered in by a local painter. For more information, check No. 7176 on the coupon and mail.

No. 7177—Gravity Powered Grain Spreader

Habco Manufacturing Co. announces the Flow-Rite gravity pow-

Send me information on the items marked:

☐ No. 7172—New Coccidiostat
☐ No. 7173—Grain Storage Equipment
☐ No. 7174—Auger Molasses Mixer
☐ No. 7175—Grain Dryer
☐ No. 7176—Auto Advertising Device
☐ No. 7177—Gravity Powered Grain Spreader

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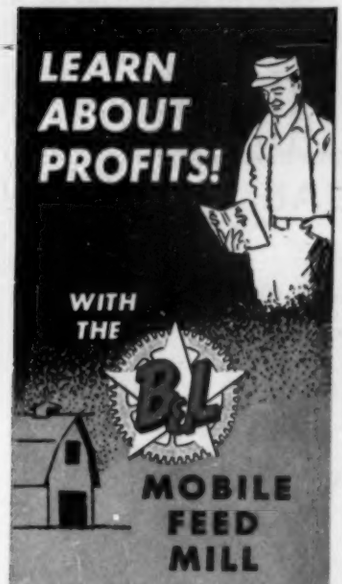

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1249 Twelfth Street S.W. Cedar Rapids, Iowa

ered grain spreader. The spreader fits in the filling hatch of any standard bin, the company says, and distributes the grain evenly in bins up to 30 ft. in diameter, with the force of the grain falling from the auger or elevator providing the "motive" power. The unit can be easily moved from one bin to another, the company says. Hot spots are eliminated and drying is speeded up, according to company literature. The spreader can be used in flat storage buildings and has the capacity to handle grain delivery from augers up to 10 in. in diameter and from all farm type flight elevators. For further information, check No. 7177 on the coupon and mail.

Also Available

The following new products have been described in previous issues of Feedstuffs and information about them may still be obtained by jotting the appropriate number of the coupon and forwarding it to Feedstuffs.

No. 7118—Lysine supplement, Merck & Co., Inc.

No. 7119—Booklet on Piperazine, Jefferson Chemical Co., Inc.

No. 7120—Poultry feed flavor, Flavor Corporation of America.

No. 7121—Level control bulletin, Flo-Tronics, Inc.

No. 7122—Molasses unit bulletin, Sprout, Waldron & Co., Inc.

No. 7123—Swine mixing salt, Morton Salt Co.

No. 7124—Mobile management bulletin, Seco, Inc.

No. 7125—Feed pellet binder, Cargill, Inc.

No. 7126—Feed flavor booklet, Flavor Corporation of America.

No. 7127—Bulk truck data, Sprout, Waldron & Co., Inc.

No. 7128—Enzyme approval, Merck & Co., Inc.

No. 7129—Adjustable elbow, Huss & Schlieper.

No. 7130—Conveying bulletin, The Day Co.

No. 7131—Equipment bulletin, Fuller Co.

No. 7132—Pallet booklet, Raymond Corp.

No. 7133—Broiler disease program, Chas. Pfizer & Co., Inc.

No. 7134 — Displacement blower bulletin, Sutorbilt Corp.

No. 7135—Pig anemia preventive, E. R. Squibb & Sons.

No. 7136 — Bulk truck bulletin, Sprout, Waldron & Co., Inc.

No. 7137—1961 "Feedmaker" model, J. B. Sedberry, Inc.

No. 7138—Calf milk replacer, National Vitamin Products Co.

No. 7139 — All-steel bin, Leach Manufacturing Co.

No. 7140—Automatic poultry feeders, Chore-Time Equipment Co.

No. 7141—Hanging poultry feeder, James Manufacturing Co.

No. 7142—Reference manual, Universal Hoist Co.

No. 7143 — Drying, conditioning unit, Habco Manufacturing Co.

No. 7144—Bulk feed stations, Seco, Inc.

No. 7145—Moisture register, Moisture Register Co.

No. 7146 — Feeder bulletin, B-I-F Industries.

No. 7147—Vitamin K report, Heterochemical Corp.

No. 7148—Improved milk replacer, Borden Special Products Co.

No. 7149—Bulk feed body, Henderson Manufacturing Co.

No. 7150 — Collapsible container, Highway Trailer Industries, Inc.

No. 7151—Portable feed bin, Blosser Manufacturing Co.

No. 7152—Protein analysis report, North Dakota Agricultural College.

No. 7153—Explosion protection system, Fenwal, Inc.

No. 7154—Feed ingredient analysis table, Stabilized Vitamins, Inc.

No. 7155 — Cob conveyor, Shelby Manufacturing Co.

No. 7156 — Broiler feeder, James Mfg. Co.

No. 7157—Bin vibrator, Eriez Manufacturing Co.

No. 7158—Poultry bags, Anderson Box Co.

No. 7159—Electronic control brochure, The Electronics Control Division of Flo-Tronics, Inc.

No. 7160—Bulk feed body, Winger Manufacturing Co.

No. 7161—Counter display units, Hess & Clark.

No. 7162—Grain trailer with belt conveyor, The Wilson Trailer Co.

No. 7163—Roll-to-back nest, Keen Manufacturing Corp.

No. 7164—5-ton vertical mixer, Jacobson Machine Works.

No. 7165 — Storage tank heating coils, Dean Products, Inc.

No. 7166 — Water-dispersible vitamins, Merck & Co., Inc.

No. 7167 — Hopper-level control, James Manufacturing Co.

No. 7168—Fork truck attachment, Clark Equipment Co.

No. 7169 — Intermediate range checkweigher, Toledo Scale Corp.

No. 7170—Valve bag packer, St. Regis Paper Co.

No. 7171—Sewing pedestal, Richardson Scale Co.

General Mills Plans Turkey Test Ranch

MINNEAPOLIS—Establishment of a General Mills, Inc., Field Test Turkey Ranch at Beaumont, Cal., has been announced by E. E. Woolley, vice president and general manager of the firm's feed division.

"This new field test ranch will enable General Mills to extend under practical conditions the turkey research work now being conducted on the Larro Research Farm at Indianola, Iowa," said Mr. Woolley.

The new turkey field test ranch will be managed by James V. Wyatt, who will be responsible to R. R. Clayton, farm manager of the Larro Research Farm at Indianola, Iowa. The entire operation will be directed by Henry Witz, director of Larro research.

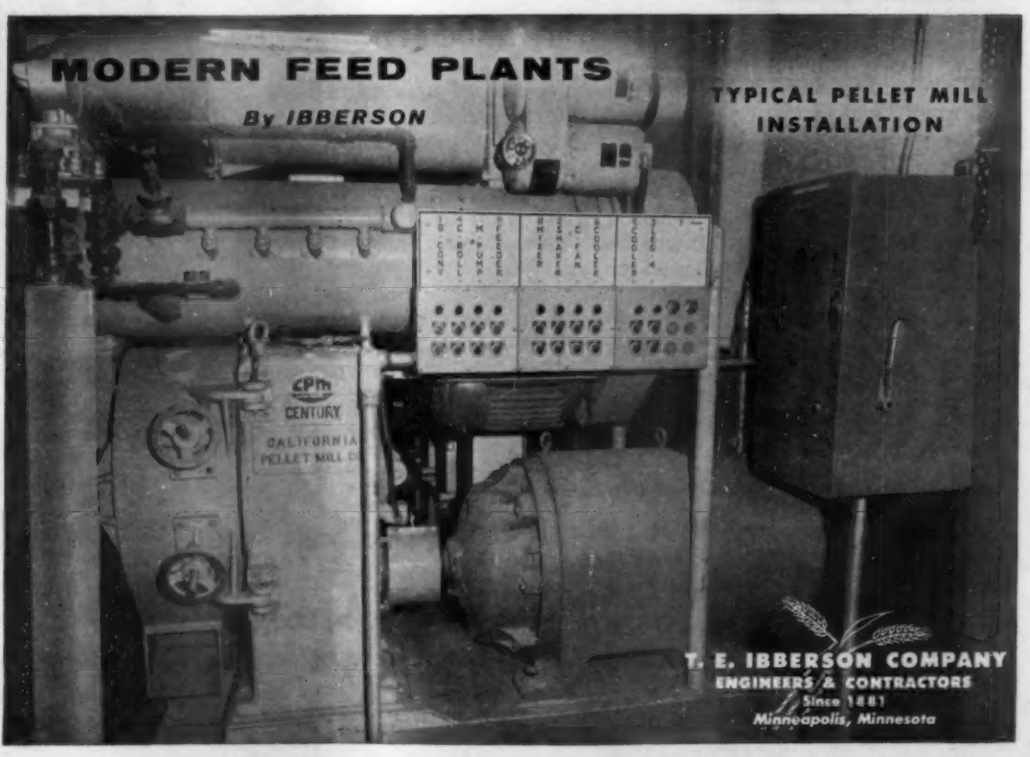
Mr. Wyatt has an extensive background in feed and turkey raising, according to the company. He operated a turkey ranch in California for four years and has had 10 years of experience in the turkey industry with General Mills.

Mr. Woolley stated that changes in the turkey industry have been brought about by changes in consumer demands and specification production. "Additional field testing and research is necessary to lower the costs of production, evaluate strains of turkeys, formulate new feeds and find new feeding and management practices to meet this challenge," he added.

Feeder Pigs Scarce Item in Wisconsin

MADISON, WIS.—Wisconsin may have lost some of its reputation as a supplier of feeder pigs, because many state producers a few months ago sharply reduced their sow herds, Robert H. Grummer, University of Wisconsin animal husbandman, said recently.

Mr. Grummer said that, in a short time, feeder pigs became a scarce item, and Wisconsin could not fill the orders of Midwest feeders, so the buyers went elsewhere. He noted that a sound feeder pig industry was built on steady supply, and that when sows went to market some valuable breeding stock that might be hard to replace later was lost.



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GREATER PURITY!
MIXED CAR SAVINGS!
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Constant vigilance is maintained by **CCC's extensive control laboratory** to make certain that every shipment of CCC Calcium Carbonate is of uniform quality to help you produce feeds of constant uniformity.

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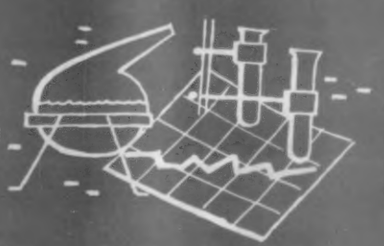

The **purity** of CCC Calcium Carbonate makes your feeds look better and, thereby, sell better, as well as do a better job nutritionally.

3 MIXED CAR SAVINGS

You pay no premium for CCC Calcium Carbonate. And you can save **freight** by buying in mixed cars, (combining shipments of CCC Calcium Carbonate with CCC Trace Mineral Premixes, Shellmaker and Barn Brite).

4 NEW PRODUCTION FACILITIES

To give your customers good service, you must have good service from your suppliers. **CCC has doubled production facilities** in the last ten years. This, combined with three shipping points, makes possible fast, dependable service at all times.

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THE THREE PURITANS symbolize the three CCC quarries—in Quincy, Illinois, Carthage, Missouri and Weeping Water, Nebraska—so called because of the high purity of the deposits.

Feed Man Says Mill Office Is Best Place to Sell

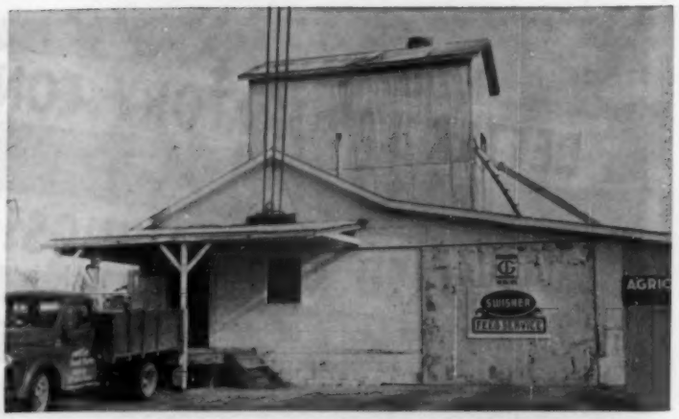
By Al P. Nelson
Feedstuffs Special Writer

Where is the best place to sell feed?

Melvin Cessna, who operates the Catlin (Ill.) Feed Mill, says that the best place to sell feed is right at the mill, and more specifically, in the office.

"When a farmer comes to us and says that he wants some feed for his hogs or poultry and asks what we have to recommend, this is our golden opportunity to really sell him on the feeds we carry," says Mr. Cessna. "Such a man can become a regular customer if we handle him right. So I go into his needs with him very thoroughly and we set up a Swisher Feed program for him that fits his case. If he has grains to use in the ration, I show him how this can be done. Then I tell him of the super concentrates made by Swisher which we use, and also the formulas we can use and register as our feeds. This gives the farmer the opportunity to utilize his own grains in a registered feed, and at a lower cost than he can get elsewhere."

Mr. Cessna reports that he believes it a sound policy to thoroughly sell the farmers who come for advice. Then these satisfied customers usually tell their neighbors about the thorough Catlin Feed Mill feed program. Shortly, some of these neighbors will come in and make inquiries.



CATLIN MILL—Exterior of the Catlin (Ill.) Feed Mill is shown here. Owner Melvin Cessna can be seen loading the truck in the foreground.

"We're a small mill," points out Mr. Cessna. "I have one to two men seasonally besides myself. We have to take care of the business that comes in every day, and we have to give the best service we can. There's no time for me to be out in the field selling, when I've got selling to do right at the mill and office."

Feed Formula Card

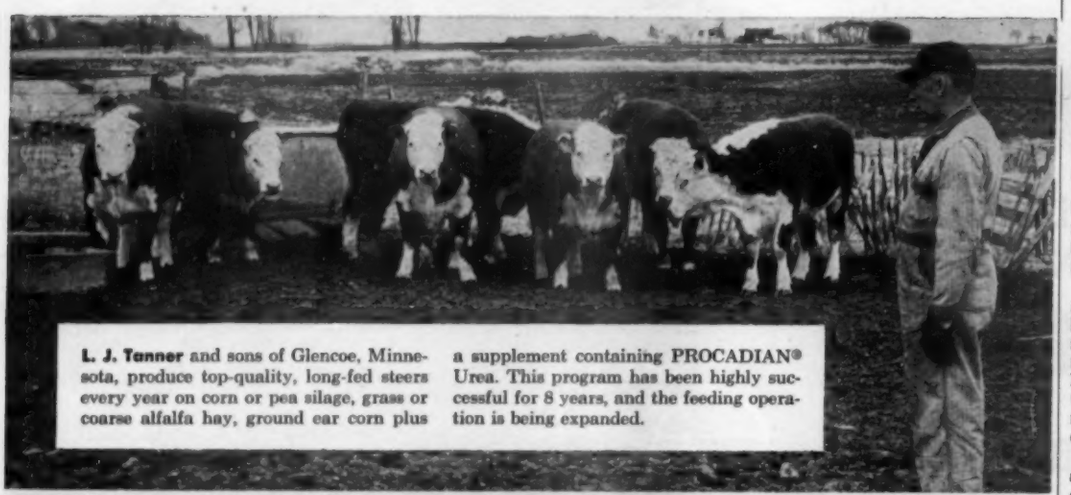
Mr. Cessna makes out a feed formula card for each customer. He shows the customer the card and its recommendations. Then Mr. Cessna knows exactly what each customer is using. He also operates a small grain bank. Thorough selling of the new customer shows him he can bring grain in for 30-day requirements and then phone in his feed order if he is busy. Because Mr. Cessna keeps good records, the customer knows his formula will be made the way he wants it.

"We take the time to sell them right the first time, then check regularly with them as they come in to see what results they are getting," reports Mr. Cessna. "Of course, when I get a little free time I call on customers in the field. But I try to do most of my selling in the mill and office."

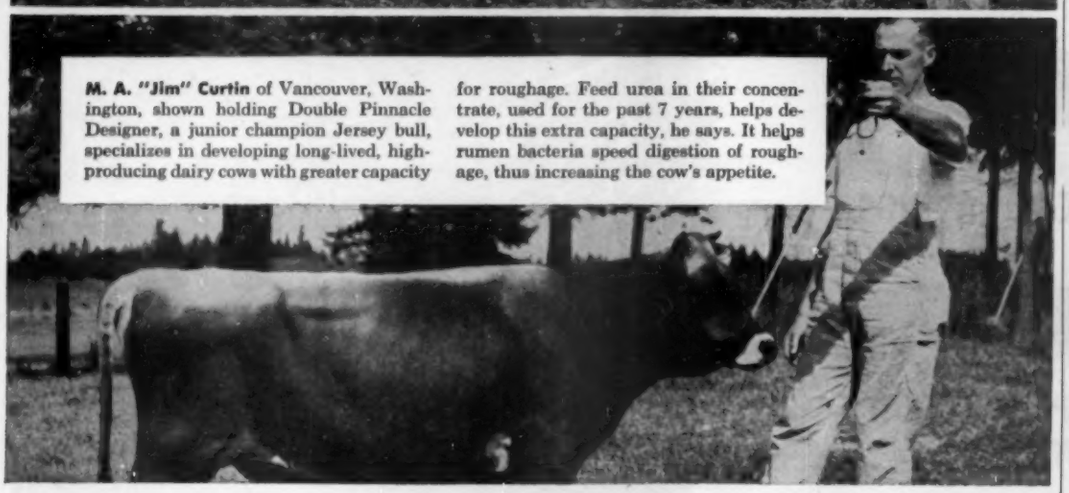
Mr. Cessna has a small office with a couple of handy chairs around an oil stove. He also has a coffee urn

SELLING—Melvin Cessna, left, owner of the mill, talks with a farmer about his farm needs as he writes up an order. Mr. Cessna's idea is to "sell the customers who come to your mill and sell them right and they'll be salesmen for you in their areas." A coffee urn is in the background.

Long-time beef and dairy operators tell how "feed urea" pays off



L. J. Tanner and sons of Glencoe, Minnesota, produce top-quality, long-fed steers every year on corn or pea silage, grass or coarse alfalfa hay, ground ear corn plus a supplement containing PROCADIAN® Urea. This program has been highly successful for 8 years, and the feeding operation is being expanded.



M. A. "Jim" Curtin of Vancouver, Washington, shown holding Double Pinnacle Designer, a junior champion Jersey bull, specializes in developing long-lived, high-producing dairy cows with greater capacity for roughage. Feed urea in their concentrate, used for the past 7 years, helps develop this extra capacity, he says. It helps rumen bacteria speed digestion of roughage, thus increasing the cow's appetite.

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Thousands of farmers know your high-quality feeds containing PROCADIAN Urea Feed Mixture are excellent for meat and milk production at a profit. This pure, easy-mixing source of protein is so concentrated that you have plenty of room in the bag to supply all the energy, minerals, vitamins and other essentials of a balanced supplement for cattle or sheep. This helps the animals to get top feed value out of their entire ration. It pays to use PROCADIAN Urea in all your ruminant feeds. Order PROCADIAN Urea today!

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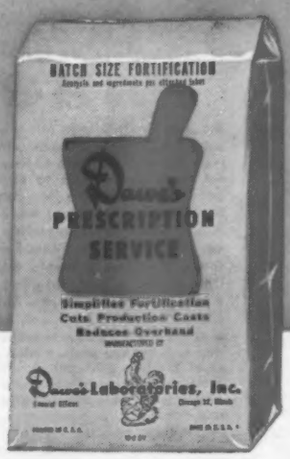

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BAGGING—Here an employee of the Catlin Feed Mill bags off some custom mix.

going all day long. The farmers like to sniff the aroma of fresh coffee brewing, and Mr. Cessna is quick to get a cup of brew for them. It is not unusual to see a customer sitting in a chair drinking coffee while Mr. Cessna and he chat about a feed program.

This dealer also urges his customers to keep an accurate record of the costs of production, particularly on hogs. He tells the customer this is the only way he can check on how well the feed is producing for him.

Using Own Grains

"I hammer home the fact that by using his own grains in a formula feed program, the customer is saving from $15 to $30 per ton on his feed. I ask him to keep records to make me prove what I say, and he does."

Here are some examples of cost differences between ready-mixed feeds and Catlin Feed Mill's custom mixed feeds:

Mr. Cessna figures a ready-mixed 17% layer feed retailing at $91 ton would cost $59.98 if the customer's own grain was used—that is, allowing $1 bu. for 1,100 lb. shelled corn and 70¢ bu. for 400 lb. oats.

On hog finisher pellets retailing at $82 ton, Mr. Cessna has determined that a custom mix would mean a difference of $36.26 ton.

This dealer has a burr mill because he says it's good for grinding corn cobs and some like it better for grinding hog feed because it grinds coarser than a hamermill. He reports that many hog feeders say that for hogs kept inside the finely ground hog feed is all right, but for hogs kept outside the coarsely ground feed is better utilized.

The grind-mix rate here is 15¢ cwt. Mr. Cessna charges 30¢ cwt. for grinding cobs. Mr. Cessna also has a 60-h.p. Blue Streak hammermill and a 1½-ton Blue Streak mixer.

He has no bulk truck, but many of his feeders get their feed at the mill in a farm truck. Since they make a considerable saving on the feed program, many feeders don't mind the labor of getting the feed off the truck when they get back to the farm, he reports.

Extension of Credit

When it comes to the extension of credit to feed customers, Mr. Cessna tells his patrons that he cannot carry them for extended periods. He expects accounts to be paid in 30 days. He reports that in the eight years he has been in business, he has lost only $150 in bad accounts.

To hog feeders who want credit, Mr. Cessna points out to them that the William Davies Co. has a Swisher hog finance plan which will handle accredited customers for a six-month period. Some customers are using these plans.

"We are essentially a small mill," states Mr. Cessna, "but we work our immediate territory very thoroughly. We don't go too far out. Most of hog customers don't raise more than 100 hogs a year and a lot of them have their own grains to work into the ration. Having a grain bank plan and our special feed program we are in a position to supply the farmer with registered rations at a low cost. And after all, that is what he is interested in. Besides that we constantly urge him to keep records to remind himself how much he is saving. We are getting along all right on this policy. It works for us."

$1,200,000 Bemis Expansion Announced

ST. LOUIS — A plant expansion and modernization program for Bemis Bro. Bag Co. totaling more than $1,200,000 has been announced by Judson Bemis, president of the firm.

Principal features of the program include a new plant near Muskegon, Mich., for the manufacture of Tekmold, and plant expansions in St. Louis, Mo.; Claremont, N.H.; Flemington, N.J., and Vancouver, Wash. About half of the total expenditures will be devoted to new papermaking and bag converting equipment installations in these locations.

The new program does not include the normal, on-going expenditures for plant and equipment modernization, Mr. Bemis said, nor does it include the company's major new bag production unit which has just been completed in the San Francisco bay area —a 155,000-square-foot plant at Newark, Cal.

Bemis produces over $130,000,000 worth of paper, textile and plastic bags and other forms of flexible packaging annually. Subsidiary operations include Morgan Adhesives Co., Stow, Ohio, and the Rose Ribbon & Carbon Mfg. Co., Inc., Harrison, N.J.

MRS. WINTERSCHEID DIES

SENECA, KANSAS — Mrs. Elmer Winterscheid, wife of the president of the Winterscheid Milling Co. here, died Oct. 26 following a lingering illness caused by cancer. Among the survivors are her husband, Elmer, and sons Kenneth and Gerald, all active in the operation of the feed firm.

Judgment of $83,250 Sought in CCC Case

PORTLAND, ORE.—A judgment of $83,250 against Earl C. Corey, convicted Aug. 9 of conspiracy to defraud the government, is being sought in a suit filed in the Federal District Court here by U.S. Attorney C. E. Luckey.

Mr. Corey, former administrative officer of the Portland Commodity Stabilization Service, and Laurence M. Smith, Waterville, Wash., businessman, were found guilty of conspiring to submit false statements to the Commodity Credit Corp. to make a profit by influencing favorable consideration of their interests by the federal agency.

Mr. Corey is awaiting sentence on the charges.

The action brought by the government also demands payment of $2,000 on each of four counts against Mr. Smith and a third partner in the Three-State Warehouse Co.

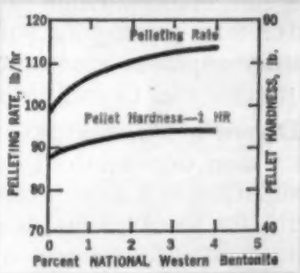
Better Pellets Through BAROID RESEARCH

BAROID'S NATIONAL* Western Bentonite increases pellet production and hardness . . . reduces fines

LABORATORY REPORT ON RANCH CUBE PELLETIZING

Baroid Chemical's Feed Research Program has found that the use of NATIONAL Western Bentonite in ranch cube formulas increases pellet production and hardness while reducing "fines."

The accompanying chart shows that the pelleting rate at maximum pellet mill capacity increases substantially when Baroid's NATIONAL Western is used as a pelleting aid. Note that both pellet hardness and production rate go up as the percentage of bentonite in the ration increases.



Optimum performance is reached at a 2-3% concentration of NATIONAL Western. This amount gives a 13-15% rise in the pelleting rate and an 11-12% increase in pellet hardness. As little as 1% bentonite improves the pelleting rate nearly 10% and raises pellet hardness 8%.

In tests conducted at Baroid Chemicals' Research Laboratories, NATIONAL Western Bentonite replaced an equivalent quantity of milo in 20% protein cattle feed rations. More detailed information on the use of Baroid's NATIONAL Bentonite in ranch cubes can be obtained by mailing the coupon below.

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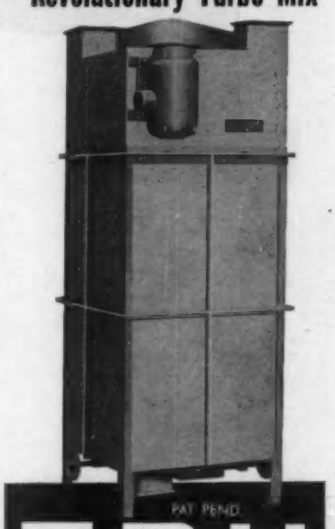

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The new T-R-H Square Mixer combines superior features of horizontal batch-type mixers with space-saving of vertical type, guaranteed to out-perform both! Super-mixing action cuts mixing time 30%, yet produces more uniform mix, with dust-free operation. Adaptable to all materials. Mixes feeds, flour, spices, chemicals, minerals, etc.

Unique design and patented tapered worm of the T-R-H Square Mixer save space (1-ton capacity in only 16 sq. ft.); simplified construction reduces installation and upkeep costs, makes stainless steel models economical. Mixer has multiple inlets and outlets; doors are easily accessible for quick inspection and clean-out.

Available in pedestal type and stainless steel models, of ¼, ½, 1, 1½ and up to 8 tons capacity.

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LYAMINE is a reliable, standardized source of lysine, one of the essential amino acid building blocks of good nutrition for all livestock and poultry.

Each pound of LYAMINE 20% contains 90,720 mg. of *completely available* L-lysine. It is packed in 50-pound Kraft bags with 2-ply polyethylene liners.

The levels of LYAMINE to be added to livestock and poultry feeds will depend upon the quantities of lysine required and the amount of this amino acid present in other feed ingredients. The lysine content of many common feed ingredients is highly variable and not completely available.

MIXING DIRECTIONS

No special handling or mixing techniques are necessary with LYAMINE. The product is designed to blend readily with all commonly used feed ingredients. No special precautions for handling or storing are required.

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1. Only very slight electrostatic properties are shown
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Whether you are interested in further experimental work in turkey, swine, or other poultry and livestock rations or in adding lysine to diets deficient in this essential amino acid, LYAMINE will fill the need without bursting your feed-production budget.

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Putting Research To Work

BY SPENCER H. MORRISON, PH.D., D. V. M.

Relative Growth and Appearance of Young Dairy Calves Fed Two Levels of Milk With a Simple or Complex Calf Starter.

● H. H. Harrison, R. G. Warner, E. G. Sander, J. K. Loosli, S. T. Slack and K. L. Turk, Cornell University, Journal of Dairy Science, Vol. 43, No. 8, 1084-1093, August, 1960.

ABSTRACT

When one reviews the literature concerning recommendations for systems of calf feeding, he is immediately struck with the fact that much of the current textbook "facts" are actually myths.

This is simply because they are based on experiments conducted with relatively few numbers of experimental animals, at differing times of the year, at different locations and even with various breeds and management! Because of this it is extremely difficult to pinpoint with any degree of accuracy whether any one system of feeding was actually best.

It is obvious that varying individual farm conditions may make one system better for the particular situation, but the question whether there is one best over-all system still remained largely unanswered until the Cornell work here reported.

A total of 160 heifer calves weighing from 85-95 lb. appearing to be of the Holstein breed and approximately three days old were used in these trials. Two experiments were conducted with 80 calves in each, using a 2 x 2 x 4 factorial design. The experimental variables were 350 vs. 250 lb. of milk; simple vs. complex starter, and four different housing units. The simple starter had the following composition: Cracked corn, 580; wheat bran, 300; crushed oats, 500; soybean oil meal, 600; dicalcium phosphate, 10, and iodized salt, 10. The complex starter had the following composition: Flaked corn, 352.5; wheat bran, 200; crushed oats, 350; cane molasses, 80; Aurofac-10, 3, and 2 gm. $CuSO_4$; all the preceding loose in the mixture, with the following ingredients combined in the mixture as pellets: Linseed meal, 200; soybean oil meal (44%), 360; alfalfa meal, 140; cane molasses, 80; dried skimmilk, 100; corn distillers solubles, 100; irradiated yeast, 0.5 (9,000 I.U. Vitamin. D_2/g.); Vitamin A palmitate (4,500 I.U./g.), 4; dicalcium phosphate, 10, and iodized salt, 10. The housing units were as follows: 20 4 x 6 ft. pens and 20 3 x 4 ft. tie stalls located in the same barn; 40 pens, either 4 x 7 or 7 x 6 ft. at farms 2-5 miles from the first one. The first experiment was conducted from June 25 through Aug. 3, while the second was from Oct. 10 through Nov. 18, 1957.

Hay (second cutting alfalfa-grass mixed hay) was available free-choice after the second day of the trials. It was chopped into approximately 4-in. lengths. The experimental starters were also offered beginning after the second day of the trials, and as the experiment progressed, the consumption was limited to not more than 4 lb. daily. It was weighed-back when more than 2 lb. had accumulated in the feed box and refused. Fresh water was available at all times. The milk feeding schedule was as follows:

	350 lb. total Dam	250 lb. total Dam
Birth to 3 days	4.0	4.0
4th to 7th day	4.5	4.5
2nd week	5.0	5.0
3rd week	4.5	3.5
4th week	3.5	2.5
5th week	3.0	..
6th week	2.0	..

Standard digestion trials were also carried out at 16 weeks of age using a total of six calves, two receiving each of the starters and two receiving hay alone. Where used, the starters constituted 60% of the ration. A two-week constant intake and 10-day collection period were used with starter TDN being calculated by difference. By this method, the TDN (total digestible nutrients) values of both starters were the same, 69. The TDN value of the hay alone was 42, a value which was substantially lower than previously noted for 16-week-old calves fed a similar hay by Hogue et al. in 1956.

The results of the two trials are quite interesting and form the basis for some practical recommendations for dairymen. As would be expected, the calves consuming 350 lb. of whole milk gained significantly faster than those receiving a total of 250 lb. of whole milk (1.20 lb. vs. 1.12 lb. per day gain).

Also, it was obvious that calves on the lower milk level made up for part

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of the energy difference by consuming significantly more starter (total starter consumption 59 lb. vs. 49 lb.). However, they did not succeed in making up the whole difference, because the figures revealed that those calves on the 250 lb. whole milk level only consumed 90% as much TDN as those on the higher level.

On the basis of the experimental results, the Cornell workers have proposed that a practical minimum level for average daily gains by calves of Holstein type is at least 1 lb. per day to 7 weeks of age. Ninety-six per cent of the calves which achieved this gain were thrifty and smoothly fleshed. It was possible for 86% of the calves on the 350 lb. whole milk level, and 72% of those on the 250 lb. whole milk level to make this desired daily gain rate.

In this trial, there were no real significant differences between complex and simple starters which could be seen in rate of daily gain or amount of starter consumed. However, it should be pointed out that there was a distinct trend towards higher consumption and consequent better gains on the simple starter, possibly due to poorer complex starter consumption during the fall season trial.

The rate of gain was significantly less for all calves during the fall season, and it was obvious that during this season those calves in tie stalls performed poorer than those kept in pens.

In spite of differences in gain reported favoring the higher milk system, the total costs of raising calves strongly favored the lower milk system (26% less). The difference in costs was largely attributable to the reduced amount of milk fed and not to the difference in costs between the simple and complex starters.

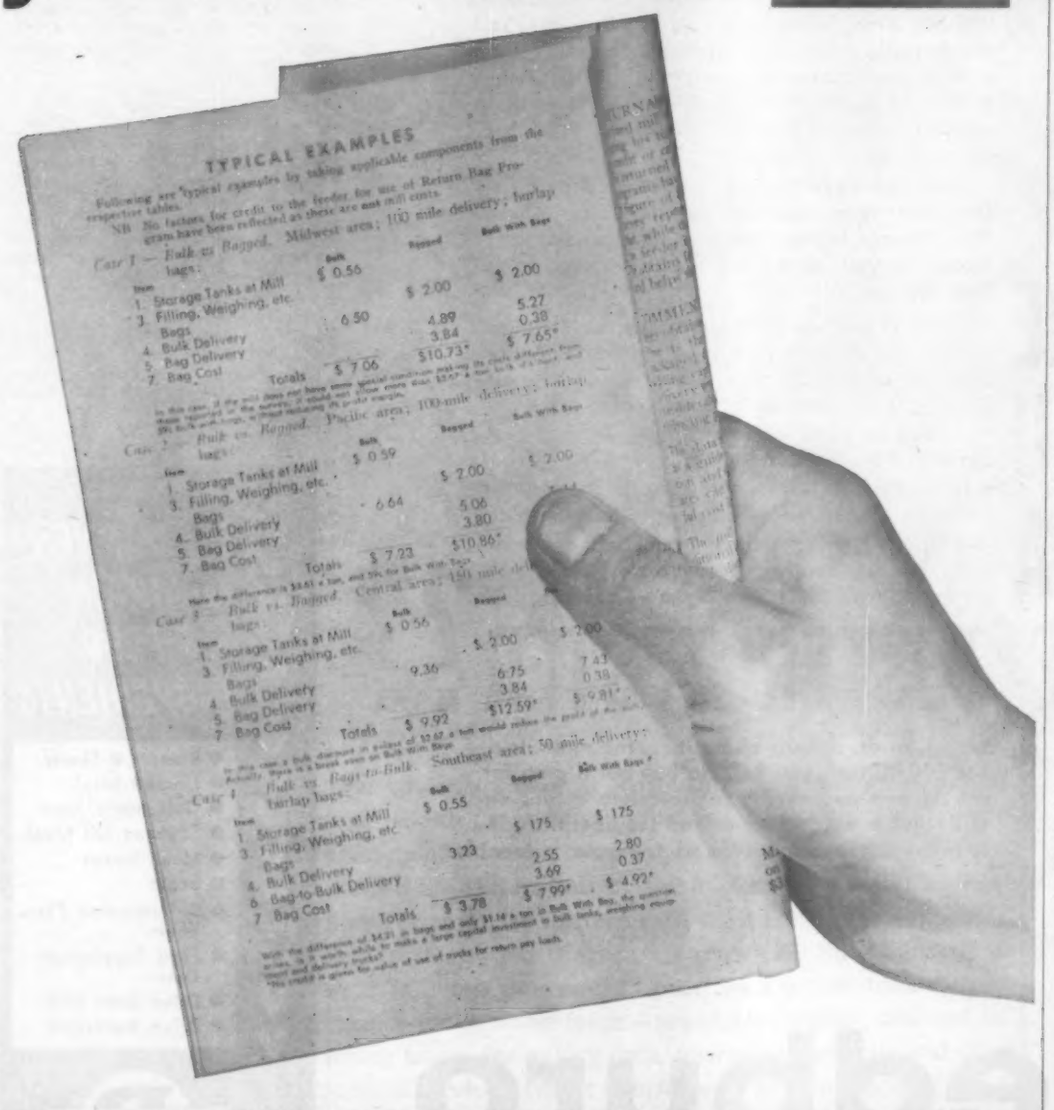
COMMENT

The decision of whether or not to feed milk for a longer period of time vs. one of limited time (250 lb. total whole milk) of course depends upon many factors, such as available supply, price of milk, etc. Although it is true that slightly better gains, and therefore slightly better appearing calves, may result from the use of more whole milk, it is also equally true that when animals raised by the various systems are compared at time of calving, little "real" difference will be apparent, especially if they have been offered liberal amounts of good quality roughage, etc., during the balance of the growing-out period. Since more than 72% of the calves tested in this experiment were able to achieve the desired 1 lb. daily gain level, it is very questionable from the standpoint of cold economics whether or not the extra 100 lb. of whole milk was either desirable or worthwhile. If calves are not gaining at the 1 lb. average daily gain level, the dairymen probably should "pinpoint" these individuals and offer them more whole milk.

Although it is true that many of the calf starters on the market today are of rather complex formulation, it is becoming more apparent each day that this is not necessary and quite a bit more costly if such ingredients as animal-by products, etc., are included in the ration. One should not confuse the term starter with "milk-replacers", however. Starters are meant to be fed dry along with whole milk for varying lengths of time, and then forming the chief grain after weaning. Milk replacers are meant to be used as complete milk replacements for calves weaned at early ages (usually, 10-14 days) from whole milk, are usually fed in liquid form and are necessarily quite complex in formulation.

Tie stalls may be satisfactory in the warmer climates, but it has always been my personal opinion, backed up by practical experience, that calves do better in the colder season of the year if they are confined to small solid-sided stalls with walls approximately waist-high. The Cornell work bears this opinion out.

you need to know costs!



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Delaware Poultry Labs Appoints Dr. D. Fogg

MILLSBORO, DEL.—Appointment of Dr. Donald E. Fogg, D.V.M., as director of technical services for Delaware Poultry Laboratories has been announced by Dr. Hiram N. Lasher, vice president and director of the laboratories.

Dr. D. E. Fogg

Dr. Fogg will play a key role in DPL's expanding poultry disease research program, Dr. Lasher said. He will also work closely with the animal health division of Sterwin Chemicals. Inc., with which DPL is affiliated.

Dr. Fogg was manager of Merck's poultry experimental farm near Cheswold, Del., and later technical service manager of the company's animal health department at Rahway, N.J. Prior to joining Merck in 1951, he spent four years in private practice, and held positions in the U.S. Department of Agriculture and as assistant pathologist for the Delaware State Board of Agriculture.

FIRM INCORPORATES

PULLMAN, WASH. — Articles of incorporation have been filed for Husky Laboratory, Inc., to operate a business of producing and distributing feed additives, vaccines and biologicals for animals. The firm will also engage in research in diseases, nutrition and drugs for animals and the laboratory production and sale of animals. The incorporators are: Beverly P. and R. Keith Farrell and Mary Ellen Gorham, all of Pullman.

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JOE BROOKS

(Continued from page 36)

our regulars? How willing are we to go out of our way to get new customers? Our competitor is doing all of these things. We've got to be on our toes—always."

Why a Feed Club?

"If that's the case, Joe," put in Milt, "why do you belong to a district feed club? Those fellows are your competitors. Why give away your best ideas?"

Joe chuckled. "That's a pertinent question. I think every dealer knows some fellows will stick in business and make a profit, and others won't. At a feed district meeting you learn other dealers' views on big feed problems. It helps you think and plan better. You contribute something to the discussion, but you take home more than you give."

"Why, Joe," blurted Butterball, "if—if that competitor drives you out of business, we'll—we'll be out of a job!"

Joe nodded. "Yes, that is true, and that is one reason why I brought this model here tonight. We are all pulling together in this business, so that I can make a profit on my investment and so that I can continue to pay you fellows a good wage, plus a bonus for extra volume. If we work like a team—if we stay alert—we can be one of the feed firms that stay in business at a profit."

"Golly," said Windy Kramer, the routeman, "I'm sure gonna be nicer to customers. I'm gonna look for ways to sell more goods. My eyes have been opened, Joe."

"Good," smiled Joe. "All of us have to be needled now and then, and that includes me. I'm going to put this model in our rest quarters for 10 days, so that all of us see him and his sign every day. Customers won't see him—only us. And that will help remind us to do as well as our competitors—or better."

"We can beat him," Pop Henley muttered, "if we make up our minds to do it."

Joe nodded. "I think we can, too. I'm posting another sign in the employee quarters." he held up another sign. The copy told employees to be pleasant and friendly to each customer, to inquire about their interests, their families, their crops, herds and other projects. Employees also were urged to suggest related merchandise to customers. "And above all," said the copy, "be sure to make the customer feel that you are happy to serve him, no matter how small his need."

Butterball Barlow blew air from his lungs. "I'm never gonna forget that guy," he said, pointing to the burly model. "I hope I don't dream he's chasing me. You watch me be nicer to customers from now on, and watch me try to sell more merchandise and service."

Joe smiled. "I'm glad you feel that way, Butterball. This guy has been haunting me every day since I first went into business for myself. So far, I've been able to out-distance him by a step or two. With your help I hope to be able to stay ahead."

ARE YOU A MOISTURE TESTER TESTER??

Some grain men are moisture tester testers without even knowing it. Most often they're the bargain hunters or gimmick fanciers who always seem to end up with untried and unproven equipment. All too often the things that cost them less to buy end up costing them far more to own.

Instead, we hope that you're the kind of moisture tester tester who finds out all you can about the different brands and models available and makes up your own mind about the one that's best for you.

Try 'em all and we think you'll buy the Steinlite 500-RC. It's the best and newest of the Steinlite line that already is more widely used than all other makes of moisture testers combined.

No need to guess at how the 500-RC will perform . . . it's backed by years of research and offers you a full year's factory guarantee. It performs routine testing automatically in seconds, even makes perfect tests of grain right from the drier or samples of mixed moisture content . . . no need to wait hours for moisture equalization.

No ifs, ands, or buts about it . . . the new Steinlite 500-RC costs you $495 to buy but it pays for you to own one. Write for complete details on this reliable moisture tester and the liberal trade-in allowances being offered for your present equipment.

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STERLING SALT PUTS A PLUS IN YOUR SWINE FEEDS

By Ewing Galloway, N. Y.

Your customers depend on you for feeds that provide maximum health protection for their animals. You can offer this protection, without increasing your mineral inventory, by using Sterling Swine Supermix Blusalt in place of plain salt. Sterling Swine Supermix is fortified with extra zinc to protect against Parakeratosis, and contains six other vital trace minerals as well. Thus one fine product provides a proper trace-mineral balance for all swine feeds—pre-starter, starter, sow and fattening feeds. For mixing data, guaranteed analysis and other formula service, contact International Salt Company's Farm & Feed Department, Clarks Summit, Pa. District offices: Boston, Buffalo, Charlotte, Chicago, Cincinnati, Detroit, Newark, New Orleans, New York, Philadelphia, Pittsburgh, St. Louis.

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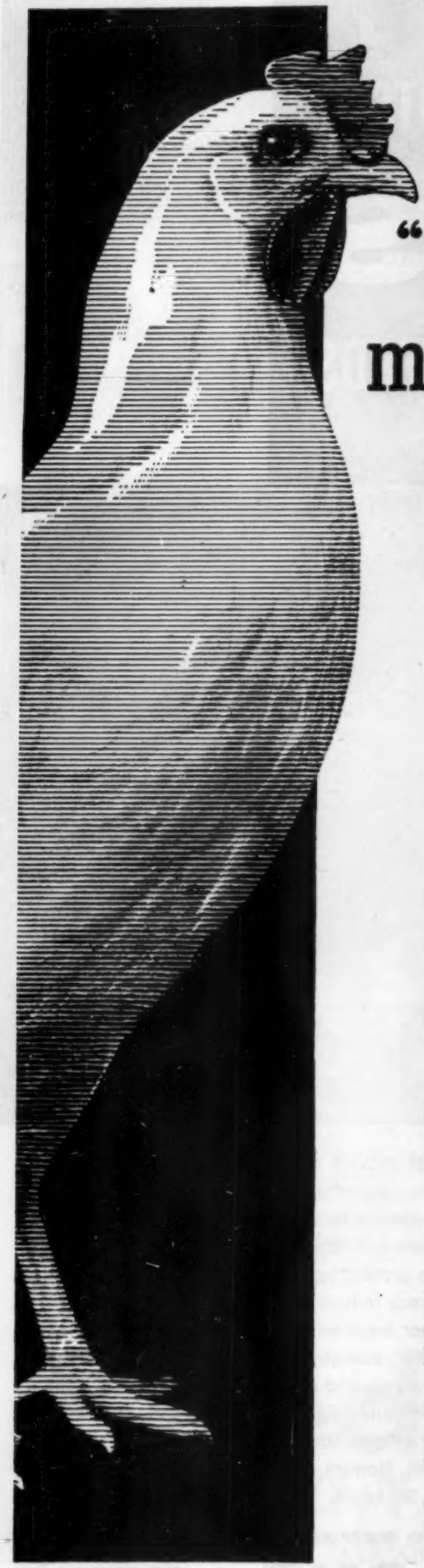

HESS & CLARK'S

"TWO-WEEK TUNE-UP" means business for you!

Here's another new feed-promotion idea from Hess & Clark. It's a "reconditioning" plan for laying flocks that aren't doing well. In combination with FPI, it will help you sell more feed...will help your customers get better results. The ad at right will soon give egg producers the full story.

Prospering in your business of selling layer feed... as in our business of selling feed medications . . . depends on one thing: helping your customer make more money from his laying flock.

Hess & Clark's new "Two-week Tune-up" idea for layers ...in combination with the now well-known Full Performance Index (FPI) plan... is the most aggressive combination of feed-promoting ideas yet devised to help egg producers.

The two plans work together to help you get new customers. *Enthusiastic* customers. First, let's take a brief look at FPI.

FPI is a complete program designed to help egg producers get *Full Performance* from their layers. It sets goals for money-making egg production: 250 eggs per hen housed; 4.5 lbs. feed per dozen eggs; 90% laying house livability; and 90% Grade A eggs. Then, FPI helps poultrymen meet these goals, giving emphasis to good birds . good feed . . good management . . . and nf-180 low-level feeding. nf-180, fed to provide 25 grams furazolidone per ton of feed, frees birds from a major obstacle to Full Performance — *constant disease drag.*

Poultry scientists say there is no such thing as a 100% healthy bird. Subclinical infections are always present, holding performance down. In combination with the winter "stress-season," *disease drag* can trigger really dangerous disease . . . cause costly laying slumps. When that happens, an egg producer needs help. Fast!

That's why Hess & Clark developed the "Two-week Tune-up" idea ... to help flock owners snap birds out of laying slumps and to provide an opportunity for you to get additional customers on the FPI program.

The "Two-week Tune-up"...using an nf-180 "booster-type" feed containing 100-200 grams furazolidone for 14 days* ...cleans birds out...clears up hidden troubles and stresses that drag performance and efficiency down...gets birds laying again.

Tape-recorded interviews reveal that the majority of egg producers who now feed nf-180 continuously got started when they had flock problems. It adds up to this: help a poultryman out of trouble with an nf-180 "booster-type" feed, and you've got a new FPI customer.

Contact your Hess & Clark salesman immediately for full details on the "Two-week Tune-up." (If you don't carry an nf-180 "booster-type" feed, see about adding it to your line.)

*See nf-180 label for further details.

19 FARM AND POULTRY MAGAZINES WILL CARRY THE "TWO-WEEK TUNE-UP" STORY IN JANUARY AND FEBRUARY

When winter stresses drag egg production below FPI goals, "recondition" your layers with a...

"TWO-WEEK TUNE-UP" for Full Performance

Just as your car needs a seasonal "tune-up" to help performing at top efficiency, an nf-180 "Two-week Tune-up" can make a world of difference in layer performance.

nf-180 "reconditioning" clears birds out. It clears up stress-caused drugs that pull production and efficiency down. Particularly, it helps birds hold a steady rate of lay through weather changes that can trigger laying slumps when birds near the end of their early peak.

Producing in the high 70's or 80% for two or three months in a row is a strain on a still-growing young pullet. It wears her down to the point where winter storms or disease can really pull the rug out from under egg production.

"Tune-up" your layers

See your feed dealer. He can probably provide you with the nf-180 "booster" feed you need—one containing 100-200 grams furazolidone per ton of total ration. If your dealer does not have an nf-180 "booster-type" feed, he can easily mix it for you by adding nf-180 to your present layer feed.

"Tune-up" layer performance by feeding this nf-180 "booster-type" feed for 14 days. Check what happens. Watch egg production ... feed consumption ... mortality ... and the general vigor of your birds. At the end of two weeks, you'll see a real difference in layer performance.

Next step: FPI plan

When you've finished "reconditioning" your birds and checked the results, you decide if nf-180 was worthwhile. Most likely you'll want to continue to get nf-180 benefits.

Hess & Clark's new FPI (Full Performance Index) plan is a practical, low-cost way to do it. Your feed dealer can supply you with an FPI laying feed containing a low level of nf-180 (25 grams furazolidone). The cost is only about a penny per hen each month ... the return, many times that in extra income.

The FPI plan, though, includes far more than just nf-180 protective feeding. It is the most comprehensive program ever devised to help you make more money from layers. First, FPI sets goals for profitable egg production: 250 eggs per bird; 4.5 feed conversion; 90% Grade A eggs; and 90% laying house livability.

Then, FPI outlines the way to meet these goals. Good birds, good feed, careful management and nf-180 to control disease drag all get proper emphasis. Your feed dealer can supply you with free record charts to help you keep flock performance on target toward FPI goals.

Goal: Full Performance

The principle behind nf-180 "reconditioning" is simple: Two weeks feeding of an nf-180 "booster-type" feed clears out the many hidden troubles and stresses that hold production down ... "tune-up" birds so they can meet their fed-in, bred-in laying potential. Then, when they're up to full performance, a continuous low level of nf-180 helps keep your flock at this high level.

(If for any reason your dealer can't supply nf-180, write us immediately. Give your dealer's name. We'll send him full details.)

The page at right has more interviews with poultrymen who have found nf-180 the answer to layer health and production problems.

T. C. Gray, Inc., South Carolina

"We use nf-180 as a conditioner and to keep us from having trouble," says breeder T. C. Gray. "It keeps 10,000 layers. If a hen goes off feed, nf-180 will put it back to laying, and that's why we found nf-180 pays its way. It keeps hens laying instead of loafing."

Calvin Jones, Malvern, Ohio

Calvin Jones feeds nf-180 at a continuous low level to his 1,200 layers, going to the booster level during stress periods. "I think of nf-180 as an insurance," he says. "It keeps birds healthy and protects them against stress."

John Lutter, New Freedom, Pennsylvania

"I've seen that nf-180 can shape birds up if they don't feel just right," says John Lutter, of his 7,500-bird flock. After comparing nf-180 with an antibiotic on his farm, he said: "The birds on nf-180 averaged 271 eggs ... 28 eggs better than the others ... and mortality was 5.7% lower."

Martin Schottegat, Jr., Lakewood, New Jersey

He tried nf-180 on half of his 12,000 layers. "The birds were laying 68% before nf-180," he says. "With nf-180, production went as high as 75 to 80% ... right when everybody was complaining about production going down from a late storm."

Ralph Jarsch, Waukesha, Wisconsin

"I tested nf-180 on one row of 416 caged layers," says Ralph Jarsch. "In just 2 weeks, production jumped from 138 to 258 eggs per day. Now I'm through monkeying around. I give all 2,500 birds one feed with nf-180 and stay with it."

HESS & CLARK
ASHLAND, OHIO
Division of Richardson-Merrell Inc.

NC-6-21

Full-page and spread ads, like the one above, will carry Hess & Clark's new "Two-week Tune-up" plan to egg producers. This big advertising push in January and February supplements our regular FPI advertising ... gives added impact. The FPI program is backed by 65,000,000 ad page impressions ... and millions more on radio. A feed manufacturer recently summarized the result of Hess & Clark advertising: "So many people have come in asking about FPI and wanting to get started on it," he said, "that I can't get along without an FPI feed."

FPI
250 EGGS
4.5 Lbs. FEED CONVERSION
90% LAYER LIVABILITY
90% GRADE A'S OR BETTER
CONTINUOUS LOW-LEVEL nf-180 FEEDING

HESS & CLARK
ASHLAND, OHIO
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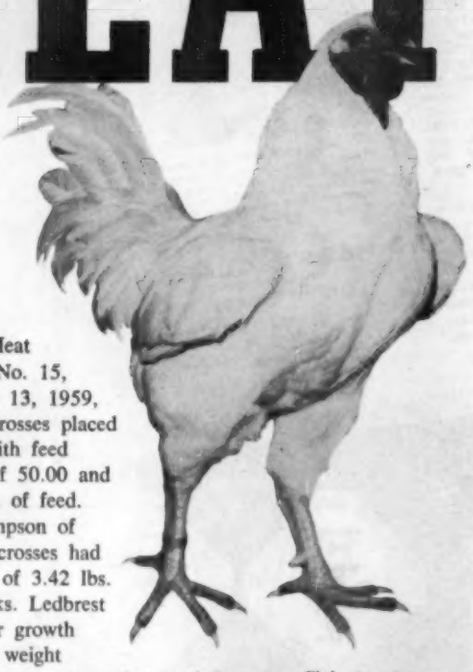
FEED to MEAT



In the Arkansas Meat Performance Test No. 15, August 18-October 13, 1959, Ledbrest Broiler Crosses placed first and second with feed conversion ratios of 50.00 and 50.38 per 100 lbs. of feed. The Ledbrest-Thompson of Arkansas winning crosses had an average weight of 3.42 lbs. per bird at 8 weeks. Ledbrest Crosses, with faster growth rate, reach market weight sooner while broilers are converting at their most efficient rate. Get more meat faster with Brown's Ledbrest Breeder Cockerels.

Write today for additional information on Brown's LEDBREST Cockerels . . . an exclusive breed second to none!

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BROWN'S LEDBREST®
CORNISH CROSS
BREEDER COCKERELS

PLANT—Shown above is the feed store and egg processing plant of Rite-Care Distributing Co., Shreveport, La.

Marketing Is Important Part of Integrated Egg Operation

By Jess Blair
Feedstuffs Special Writer

The Rite-Care Distributing Co., Shreveport, La., has reached the pinnacle of vertical integration in its production and sale of eggs. The company owns 45,000 laying hens, the houses and land where they are located, feed trucks and processing plants. Rite-Care even carries the eggs directly to the grocery stores.

"It has been a gradual process," said J. R. Heflin, co-owner and manager. "The only thing we lack in having complete integration is that we do buy eggs from other producers in order to satisfy the demand."

So as to guarantee an adequate supply of eggs, Mr. Heflin worked out an agreement with five other large producers to handle their eggs. These are mostly feed dealers who had developed flocks of their own, but found marketing difficult. These owners bring their eggs in 30-dozen cases to the Rite-Care plant in Shreveport.

"Altogether we are now processing and selling 300 cases a day," said Mr. Heflin, "with the number steadily increasing each year. Some are sold under our own Rite-Care brand, while one producer has us label his under his own Riggs Farm brand. One of the largest customers is the Pak-A-Sak Co. It has 21 drive-in groceries in Shreveport and sells eggs under the Pak-A-Sak label."

Experienced Men

In managing the company's flocks, Mr. Heflin hires experienced men to stay on the farm and, in addition, he has a poultry expert who not only helps with the company farm but also assists the cooperative producers on management problems.

Feed for the Rite-Care hens is bought from the mill, which is located only a few blocks from the processing plant, then carried by bulk truck to the farm.

Mr. Heflin says that working with a few large efficient producers is more profitable than trying to develop farm growers. They not only are better managers, but are financially able to expand their flocks when the market warrants it, he commented.

"One stumbling block we faced was in getting pullets," he explained. "The independent hatcheryman has just about disappeared in some areas, so we decided to build a hatchery of our own at Homer, La. There are six of us in it, with each one being a share-holder. Mostly we hope to keep enough young pullets coming on, but if there are any profits, they will be divided equally. In connection with the hatchery, we also have developed our own breeding flocks."

Mr. Heflin says vertical integration has come about because too many people were involved in the production and sale of eggs. The farm producer could quit, thus reducing the hatchery's output. The hatcheryman, fearing a soft market, could close down his plant for awhile. And the feed dealer might be reluctant to put out feed on credit when egg prices dropped.

"This way we control it all," said Mr. Heflin. "If a reduction is needed, we cut down all along the line. If we find a steady outlet for an extra 50 cases per day, we and our cooperative producers can effect an increase proportionately."

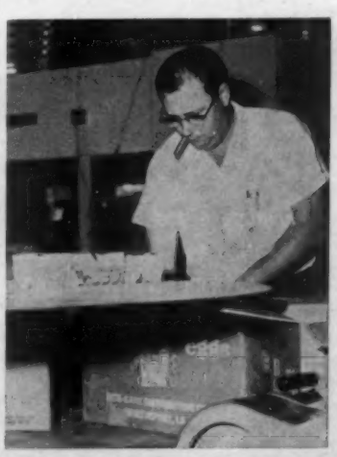
Marketing Eggs

One handicap the independent producer faces is in selling the eggs. This is a science or business within itself, says Mr. Heflin, and has very little to do with poultry science, except for the quality of the eggs.

The Rite-Care Distributing Co. office keeps an ear attuned to the complaints of customers. Keeping the stores pleased means quality eggs must be produced, must be packaged attractively, delivered regularly and on time, and any bad eggs must be replaced with apologies.

"It also calls for a continuous advertising campaign," said Mr. Heflin. "We let people know over the radio and through newspapers about Rite-Care eggs and those marketed under other brands. We also have scouts looking into other areas for us. This has paid off handsomely, because we found a good outlet to grocery chains in Houston and New Orleans which enabled all of us to substantially enlarge our flocks."

Mr. Heflin thinks that marketing



OWN BRAND—J. R. Heflin, co-owner and manager of Rite-Care Distributing Co., Shreveport, La., is shown here pinch-hitting on the assembly line of his processing plant. Eggs are cartoned under the firm's own brand as well as several others for producers and chain stores. The firm is now one of the largest of its type in its section of Louisiana.

Another car of Grace Feed Urea is loaded at the multi-million-dollar Grace plant at Memphis.

DESTINATION: ONE OF THE LARGEST FEED MANUFACTURERS IN THE WORLD.

Grace is the third largest producer of urea in the United States.

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The Largest Feed Manufacturers in the World

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Micro-Prills shown with the magnifying glass are approximately 16 times actual size. The smooth, round balls flow freely, won't cake

Grace urea has proved superior in keeping feed quality up, costs down. As a result, manufacturers who use this high protein supplement in their feeds have a big advantage in a highly competitive market.

Micro-Prilled Grace Urea is a compound made up of tiny round balls. It mixes readily, pours easily, and is non-clogging. *You get an even, uniform mix throughout every time.*

And, of course, you lower your costs considerably by substituting Grace Micro-Prills for high priced protein meals.

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SELLIN' SAM — **By Jim Zilverberg**

"Is there any place we can be alone? I've got a new feed designed for finishing out turkeys for Thanksgiving."

the end product is the weak link in poultry integration. Unless there is an assured market, the producer will find times when his product sells for less than the cost.

"To get the business of chain stores, one must be able to guarantee a large volume," he pointed out. "And usually this requires a heavy financial investment and a few years of experience. It also means a steady production even though prices may drop to the break-even point. You can't get out, because if you do, the big customer such as the chain stores won't ever take you back again."

Cross-Complaint Filed Against Feed Firm

MORRILTON, ARK. — The Petit Jean Feed Co. here has reacted to a foreclosure suit filed by General Mills, Inc., Minneapolis, by filing a cross-complaint against the feed manufacturing firm.

An $82,081 foreclosure suit had been brought against the Morrilton feed firm. In the cross-complaint the Arkansas company asked for damages totaling $102,153.27. The second suit was brought before the U.S. District Court in Little Rock Oct. 21.

In the cross-complaint General Mills, Inc., was charged with "violation of federal anti-trust laws and conspiracy in attempted monopoly of the feed supply business to the broiler industry in the Arkansas River Valley area."

The new suit also alleged price-fixing among General Mills, its employees and certain feed dealers in competition with Petit Jean company. Injunctive action was also requested by means of a temporary restraining order "to keep General Mills and its agents from continuing illegal acts in an attempt to monopolize the broiler industry of the area."

Says Rail Rate Hike To Hamper Movement

BURLINGTON, COLO. — Art Wilks, chairman of the Wheat Producers Transportation Committee here, said the government's approval of an increase of rail freight rates would seriously hamper movement of grains from the high plains area. The increase was announced Oct. 21 (Feedstuffs, Oct. 22).

Mr. Wilks said the increase will mean higher costs of handling surplus wheat and will burden taxpayers, since the movement of Commodity Credit Corp. wheat stocks will be charged to them.

The increase also will divert shipping to other than railroads, Mr. Wilks surmised.

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San Francisco 11, California

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You can also get lower-potency PGB-30, PGB-20, and PGB-10 from these distributors. And, of course, you can get all four products directly from *Distillation Products Industries*, Rochester 3, N. Y. Sales offices: New York and Chicago.

leaders in research and production of vitamin A

Distillation Products Industries
is a division of
Eastman Kodak Company

AT THE MIXER—Here an MFA employee is at the Jay Bee mixer. The Prater molasses blender is a wheel unit which has a hose going downstairs into a molasses storage tank. When molasses is desired in the feed the Prater truck unit is wheeled to the mixer, connected and the molasses goes directly into the mixer in the amount desired.

NEW MILL

(Continued from page 26)

displays. He carries a sizable stock of garden and farm tools, as well as insecticides, sprayers and poultry and livestock remedies.

A traffic-building idea is the receiving of eggs. Many farmers in the area bring in eggs once or twice weekly and the firm reships them to market centers.

Fertilizer Unit

Part of the new plant, too, is a 40 by 60 ft. metal bulk fertilizer building. It contains four bins, each of which has a holding capacity of 50 tons. The firm has a spreader truck. Mr. Hyde reports that this bulk fertilizer service should enjoy considerable volume as more farmers in the area become familiar with the service.

"We are also planning to have a soil test service for farmers," reports Mr. Hyde. "This will enable us to tell them at an early date what fertilizer elements each field needs and the recommended amounts to be applied. This will permit selling much fertilizer in advance of the season."

Mr. Hyde points out that with the custom mill, bulk station, grain elevator, seed cleaning, farm store, grain drying and bulk fertilizer service, the MFA at Trenton is well equipped to give the farmer a one-stop service.

"We are able to supply him with just about anything he needs in feed, fertilizer and allied services," says Mr. Hyde, "and this is drawing more customers to our plant every month."

Explain Regulations On Dairy Antibiotics

LEXINGTON, KY. — An explanation of the recently published regulations by the U.S. Food and Drug Administration governing use of antibiotics and drugs by milk producers has been given by the University of Kentucky dairy science department. The regulations become effective Nov. 29.

The regulations prohibit selling of antibiotics and other drugs for treatment of milk-producing animals if residues of such materials can be found in the milk more than 96 hours after administration; or if the time needed for the drug to disappear from the milk has not been determined.

Dr. D. M. Seath, department head, says the new regulations cover all drugs and all dosage forms intended for use in animals producing milk for food use. They also call for label statements on drugs stating that producers are required to discard milk for the 96-hour period after dosage or for whatever shorter period is necessary to free the milk of traces of the drug. A previous regulation still in force requires similar labeling for udder-infusion antibiotics and drugs.

The regulations were made necessary by recent research findings showing that use of injectable antibiotics and certain other drugs and dosage forms, as well as the udder infusion products, contaminated the milk of treated animals, Dr. Seath said.

Little Aid Expected From Broiler Proposal

CHATTANOOGA, TENN. — The president of one of the major broiler processing plants here doubts that a broiler purchase plan advocated by four Democratic party senators would have much effect on prices, it is reported by the Chattanooga Times.

The plan to buy broiler chickens for the school lunch program as a means of providing protein food for the youngsters and at the same time helping the market for broiler chickens was advocated by Senators J. W. Fulbright, Arkansas; Stuart Symington, Missouri; Hubert Humphrey, Minnesota, and Herman E. Talmadge, Georgia.

Harry C. Carbaugh, president of Tennessee Egg Co. and a member of the Republican national policy committee, said such a plan would be all right "if the poultry is needed to strengthen the diet of the school children, but it wouldn't have much effect on poultry prices."

The four senators' request to USDA noted that broiler prices are at very low levels, "in many cases below the cost of production," and expressed a fear that further price drops might occur unless such a purchase program is undertaken. Mr. Carbaugh said that the broiler industry is "so tremendously large that buying of quantities which might be used in the school lunch program could not have much effect on the market."

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Firm Name .....
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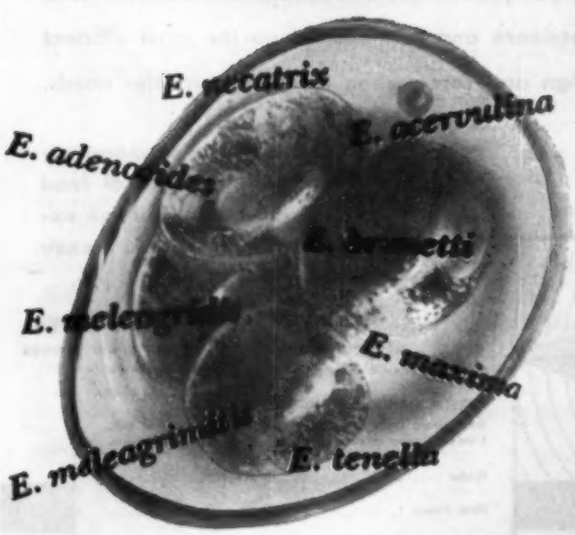

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RECEIVE "OSCARS"—"Oscars" are presented to Dr. G. M. Watkins, left, and Dr. J. R. Couch, center, Texas A&M College, for their contributions to two association projects at a recent directors meeting of the Midwest Feed Manufacturers Assn., at Ft. Worth, Texas. Lloyd Larson, executive vice president, presents the awards. Dr. Watkins was honored for his part in the new slide presentation, "Opportunity Knocks at Home Plate" and Dr. Couch for his part in the motion pictures "Progress of Nutrition" and "New Horizons", made and distributed by the association. The new "Opportunity Knocks" project carries with it a message pointing up the value of agricultural college education and the opportunities offered in the industry.

Poultry Plant Nearly Complete in Arkansas

RUSSELLVILLE, ARK. — Independent Poultry & Egg, Inc., a new firm, will begin operation in a new 4,000 sq. ft. processing plant here about Nov. 15, it was reported recently.

Construction of the firm's new plant is being completed, and equipment will be installed soon. The company will have about 10 employees, producing ice packs.

A spokesman said Independent Poultry will enter the broiler business in the future to produce its poultry needs.

The firm was recently granted a charter of incorporation. It listed 400 shares of no par value stock, and said it had $5,000 paid-in capital.

Incorporators were listed as L. C. Moorehead, president; T. A. Martin, vice president, and Wilson Falls, secretary-treasurer. All are residents of Russellville. Mr. Moorehead was also named company agent. He has been in the poultry business here for some time.

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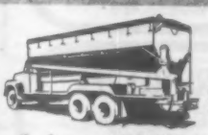

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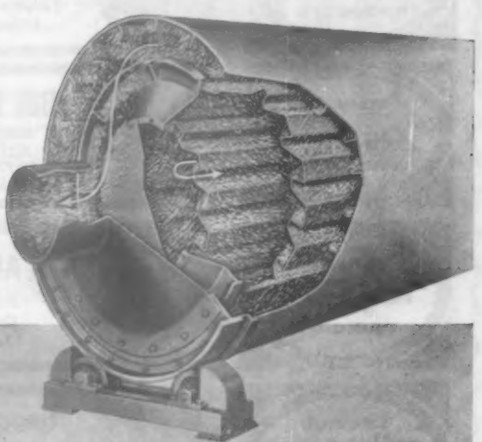

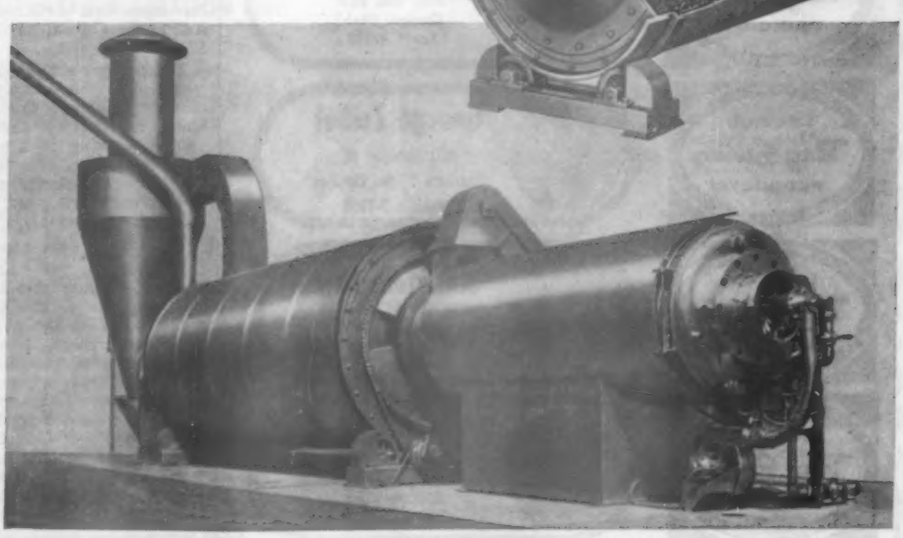

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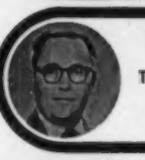

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Committee Answers Questions About Medicated Feed Labels

WASHINGTON—Answers to questions originating within the formula feed industry may be found in the official convention report of the Medicated Feed Labeling Committee of the Association of American Feed Control Officials. The report comes from Dr. F. W. Quackenbush, Indiana state chemist and seed commissioner, and chairman of the AAFCO committee.

Discussed are points of concern relative to: Feeds containing low levels of antibiotics, low levels of calcium in feeds to enhance the effect of an antibiotic, enzyme status, arsenical and hormone status, distribution of medicated feeds in arsenical and hormone status, distribution of medicated feeds in bulk, progress in the use of 5 by 8-in. "drug cards" and recording of drug lot numbers by inspectors.

The report of the Medicated Feed Labeling Committee, approved by AAFCO at the organization's recent convention in Washington, follows:

Feeds containing low levels of antibiotics. Labeling of feeds with low-levels of antibiotics has probably raised more questions over the years than most any other subject with which we've had to deal. Recently two new regulations which have been promulgated under the Food Additives Amendment modified considerably the way in which we have been handling low-level antibiotics. I refer specifically to oleandomycin and manganese bacitracin; in these regulations are found requirements that (1) the label of the finished feed bear the word "medicated," (2) that the name and amount of the antibiotics be stated irrespective of the level that is present and (3) the label bear a claim for growth promotion and/or feed efficiency.

One objective of this committee is uniformity of labeling; we spent a great deal of time in this meeting trying to get agreement on exactly how we should attain uniformity for the coming year.

Several questions were asked of the committee membership:

Questions and Answers

1. Are feeds that contain low levels of antibiotics "medicated" feeds?

The answer to this was "No." To effect uniformity it was understood that officials of the Food and Drug Administration will take steps to revise the regulations for oleandomycin and manganese bacitracin which have been issued under the Food Additives Amendment.

2. Are the individual antibiotics to be named on the label?

At the present time we have a defined product: "Antibiotic feed supplement." This definition originated in the days when antibiotics were not well-characterized and the individual ones were sometimes in short supply. The industry was allowed to use them in feeds interchangeably without naming the individual antibiotic.

However, most of the common antibiotics are now quite readily available; the manufacturer can choose whichever one he wants to use and can purchase it in a guaranteed premix. It is felt that not only the manufacturer should know what antibiotics are in the product which he purchases, but that the consumer should also know what specific antibiotic

(Turn to LABELS, page 36)

• • •

AAFCO Issues Complete Transcript Of Executive Session Proceedings

WASHINGTON — The Association of American Feed Control Officials has made available for publication a complete transcript of executive committee proceedings which transpired during the recent AAFCO convention in the Shoreham Hotel here.

As reported in the Oct. 15 issue of Feedstuffs, the rulings of the executive committee involved a number of significant changes and additions for ingredient definitions found in AAFCO's Official Publication for 1960.

A definition change of special importance to the formula feed manufacturing industry is the one which has eliminated the term "antibiotic feed supplement" and made it necessary for the manufacturer to state the name of the antibiotic or antibiotics used in a feed. (See related story on this page.)

Proceedings Quoted

Following is the transcript of executive session proceedings:

The Executive Committee met at 5:45 p.m., Wednesday, Oct. 12, 1960, at the Shoreham Hotel to consider the reports of committees and investigators. Having considered these they took the following actions and make the following recommendations.

The following Committee Reports are accepted without change: States Relations, Collaborative Check Sample, Constitution and By-Laws, Livestock Remedy, Medicated Feed Labeling, Analytical Methods for New Medicated Products, Pet Food, Committee on Terminology and Committee on Soybean By-Products.

The Executive Committee accepts the report of the Uniform Feed Bill and Regulations Committee with the following editorial change: Section 3(d) under Option A to read as follows: "Unmixed seed, whole or processed, made directly from the entire seed."

Antibiotic Feed Supplement. In accord with the recommendation of the Medicated Feed Labeling Committee we recommend that definition T-8, Antibiotic Feed Supplement, be deleted.

Bacteriological Control. The Executive Committee, in accord with the recommendation of the Investigator for Bacteriological Control, recommends that this work be continued.

Chemical Preservatives. It is recommended that (1) sodium metabisulfite be added to the list of chemical preservatives sec. 31, page 33 of the official publication of the association, (2) the initial BHA be placed before the chemical name in parenthesis (butylated hydroxyanisole) and BHT be placed before the chemical name in parenthesis (butylated hydroxytoluene), (3) the name ethoxyquin be placed before the chemical name in parenthesis (1, 2 dihydroxy-6-ethoxy-2,2,4-trimethylquinoline).

Corn Products. The Executive Com-

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mittee recommends the following changes as recommended by Investigator for Corn Products:

Delete definitions 51 and 52 and combine definitions 53 and 54 with minor editorial changes so that the definition will read:

"Corn Germ Meal (Dry Milled) is ground corn germ which consists of corn germ with other parts of the corn kernel from which part of the oil has been removed and is the product obtained in the dry milling process of manufacture of corn meal, corn grits, hominy feed and other corn products."

Propose as tentative, the following definitions:

"Corn Germ Meal (Wet Milled) is ground corn germ from which most of the solubles have been removed by steeping and most of the oil removed by hydraulic, expeller, or solvent extraction processes, and is the product obtained in the wet milling process of manufacture of corn starch, corn syrup and other corn products."

Propose that definition F-1 be moved to tentative status with minor editorial changes so that it will read:

"Condensed Fermented Corn Extractives is the product obtained by the partial removal of water from the liquid resulting from steeping corn in a water and sulfur dioxide solution which is allowed to ferment by the action of naturally occurring lactic acid producing microorganisms as practiced in the wet milling of corn."

As an editorial change in definitions 46 and 47 it is recommended that the last two words in each definition "corn solubles and corn oil meal" be changed to "fermented corn extractives and corn germ meal."

Cottonseed Products. The Executive Committee, in accord with the recommendations of the Investigator on Cottonseed Products, recommends the following changes in the definitions as follows:

That definition 61, Cottonseed Meal, be changed to read as follows: "Cottonseed Meal is a product of the cottonseed only, composed principally of the kernel with such portions of the fiber, hull, and oil as may be left in the course of manufacture. It shall be graded and classed as follows: (Adopted prior to 1928. Amended 1960.)"

The Executive Committee further moves the deletion of the following definitions:

66. Cottonseed Feed
72. Nut-Size Cottonseed Cake
73. Sheep-Size Cottonseed Cake
74. Pea-Size Cottonseed Cake
75. Pebble-Size Cottonseed Cake
76. Cottonseed Cubes or Pellets, Prime Quality

The Executive Committee moves the adoption of the following resolution to become Resolution C in this section:

"Resolution C. Cottonseed Meal and Hull mixtures shall be labeled as such and not called feed. If the protein is 18% or above it may be labeled '... per cent Protein Cottonseed Meal and Cottonseed Hulls.' If the percentage of protein is under 18% it shall be labeled '... per cent Protein Cottonseed Hulls and Cottonseed Meal.' (Adopted 1960)"

The Executive Committee recommends that the following explanatory statement, "These definitions of cake cover all physical sizes and shapes," appear in connection with definitions 69, 70, and 71 and be referred to by asterisk.

Drugs. The Executive Committee accepts the suggestion of the Investigator for Drugs in his desire to list approved drugs pending the printing of the publication and also recommends that the following drugs be added to definition T-7, New Drugs; zoalene and amprolium.

Fats and Oils. The Executive Committee recommends that definition 244, Hydrolyzed ..... Oil, be deleted. It is further recommended that definition T 31, ... Oil ..... Ester, be deleted.

Grain Sorghums. The Executive Committee recommends that definition 101, Grain Sorghum Oil Cake, and definition 102, Grain Sorghum Oil Meal, be combined and the definition read as follows: Grain Sorghum Cake or Grain Sorghum Meal consists of the germ of Grain Sorghum grains from which part of the oil has been pressed and is the product obtained in the wet milling process of manufacture of starch, syrup, and other grain sorghum products. If the name of the variety is given, it must be true to name.

Linseed and Flax Products. The Executive Committee moves that definitions 110, Linseed Oil Cake, Linseed Oil Chips, and Linseed Oil Flakes; 111, Linseed Oil Meal; and 112, Linseed Cubes or Linseed Pellets, be deleted and replaced with the following definition for linseed oil meal:

"Linseed oil meal is a product obtained by finely grinding cake, chips or flakes which are products obtained by removal of most of the oil from flaxseed by the several methods, hy-

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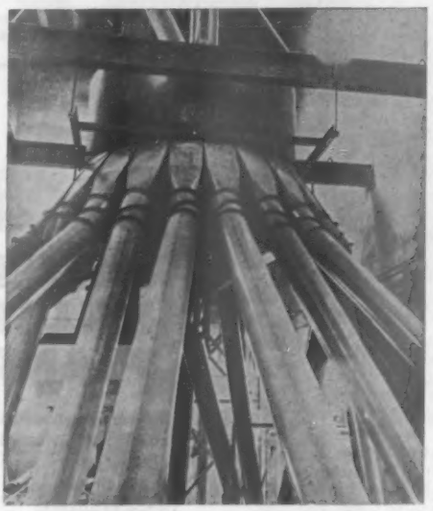

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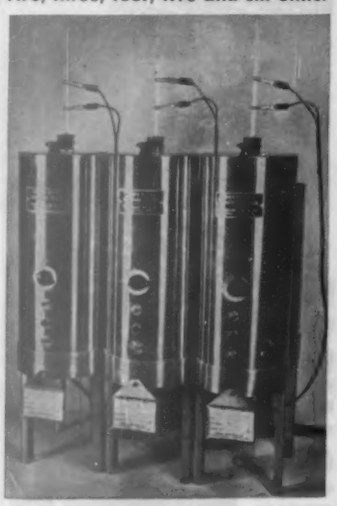

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Marine Products. The Executive Committee moves that definition T-16, Dried Fish Solubles Precipitate, be modified to read as follows: "Dried fish soluble precipitate is the product made by separating, drying and grinding the precipitate obtained when fish press water is adjusted to a pH of approximately 4.5," and remain in tentative status.

The Executive Committee moves that definition F-2, Fish Bone Meal, be dropped.

Mineral Feeds. The Executive Committee moves that "Soft Phosphate with Colloidal Clay" listed in definition 152, Additional Officially Recognized Mineral Ingredients, be deleted and there be substituted therefor Soft Phosphate.

The Executive Committee further recommends the substitution of the words "Soft Phosphate" for the expression "Soft Phosphate with Colloidal Clay" in the last sentence in Regulation 6, Minerals, under Rules and Regulations under the Uniform State Feed Bill.

Molasses. The Executive Committee, notwithstanding the recommendation of the Molasses Investigator, recommends that current tentative definition for T-20, Feding Cane Molasses, be retained pending the initiation and completion of nutritional work as proposed by industry representatives.

The Executive Committee moves that the word "feeding" be deleted from all molasses terms, definitions 153, 154, 155 and T-20.

Peanut Products. The Executive Committee acknowledges the report of the Investigator. The Executive Committee also notes that in the report of the Committee on Terminology it is proposed that this recommendation be delayed until a complete survey of states can be made by the Investigator. The Executive Committee agrees with this proposal.

Rice Products. The Executive Committee moves that the following tentative definitions become official: T-21 "Rice Bran," T-22 "Chipped Rice, Broken Rice, or Brewers Rice," T-23 "Ground Brown Rice," and T-24 "Rice Hulls," as given in the 1960 official publication of the association.

Screenings. The Executive Committee moves that definition 184 be changed to read as follows: "Mixed Screenings is screenings excluded from the preceding definition. It shall contain not more than 27 per cent fiber and not more than 15 per cent ash."

Soybean Products. The Executive Committee moves that the following sentence be added to definition 189, Soybean Mill Feed: "It shall contain not less than 13% crude protein and not more than 32% crude fiber and be placed in tentative status."

Definition 190, Solvent Extracted Soybean Feed, the word "oil" should be deleted from the third line.

That the following definitions, 191, Soybean Oil Cake and Soybean Oil Chips; 192, Soybean Oil Meal; 193, Solvent Extracted Soybean Oil Flakes; 196, Soybean Cubes, Soybean Pellets, or Soybean Pea Size, be combined into a new definition as follows:

"Soybean Meal is the product obtained by grinding the Cake, Chips or Flakes which are products obtained by removal of most of the oil from soybeans by several methods, hydraulic, expeller and solvent extracted, respectively. The name must include one of the terms 'Hydraulic,' 'Expeller' or 'Solvent Extracted' to indicate the method of manufacture of the source material. Heat shall be applied during the process. It may be sold in various physical forms other than 'Meal,' such as 'Cubes,' 'Pellets,' 'Pea Size,' 'Cake,' 'Chips' or 'Flakes.' It must be designated and sold according to its protein content and shall contain not more than 7% crude fiber and that this be placed in tentative status."

The Executive Committee moves that definition 194, Dehulled Solvent Extracted Soybean Flakes, and definition 195, Dehulled Solvent Extracted Soybean Oil Meal, be combined into a single definition and read as follows:

"Dehulled solvent extracted soybean meal is the product obtained by grinding flakes which are obtained by removing most of the oil from dehulled soybeans. Heat shall be applied during the process. It must be designated and sold according to its protein content and must not contain more than 3% crude fiber. Place in tentative status."

The Executive Committee moves the adoption of a new definition to replace T-25 to remain in tentative status and read as follows:

"Soybean Mill Run is the product resulting from the manufacture of dehulled soybean meal and is composed of soybean hulls and such bean meats that adhere to the hull in normal milling operations. It shall contain not less than 11% crude protein and not more than 35% crude fiber. Leave in tentative status."

The Executive Committee moves that definition F-4, Soy Phosphatide or Soy Lecithin be moved from Future Discussion status to tentative.

The Executive Committee moves the adoption of a new tentative definition to read as follows:

"Heat processed soybeans is the product resulting from heating whole soybeans without removing any of the component parts. It may be ground, pelleted, flaked or powdered. It shall be sold according to its pro-

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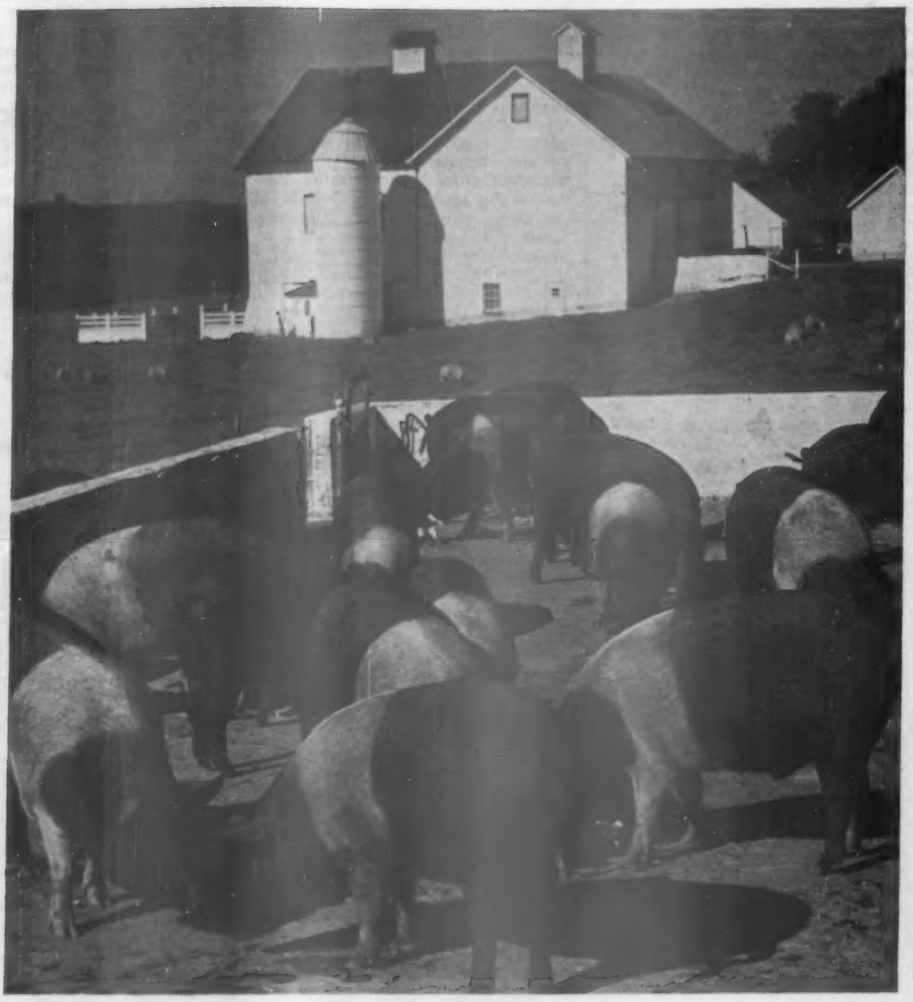

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tein content. Place in tentative status."

Vitamins. It is recommended that what is listed as definition 211, page 58, be given a heading to read "Additional Officially Recognized Vitamin Ingredients."

It is further recommended that calcium cyclamate, sodium cyclamate and stearine be removed from this list and included under definition 246, page 64, "Additional Officially Recognized Ingredients."

Wheat Products. It is recommended that the following definitions now listed as tentative be made official: T-27, Wheat Mill Run; T-28, Wheat Middlings; T-29, Wheat Shorts; and T-30, Wheat Red Dog.

It is further recommended that definitions 215, Wheat Germ Oil Cake, and 216, Wheat Germ Oil Meal, be dropped and that the following tentative definition be added: Defatted wheat germ meal is the ground cake secured in the removal of part of the oil or fat from wheat germ meal and shall contain not less than 30% protein.

The Executive Committee moves the adoption of the following definition:

"(bacteria) fermentation extract is the dried product resulting from extracting and precipitating by means of non-aqueous solvents, or other suitable means, the water soluble materials from a fermentation conducted for maximum production of enzymes using a non-pathogenic strain of the microorganism ..... in accordance with good manufacturing practices. (For label identification the source shall be indicated as B. subtilis, A. oryzae, A. niger, etc.)

"Crude ..... fermentation solubles is the dried material resulting from drying the water soluble materials after separation of suspended solids from a fermentation conducted for maximum production of enzymes using a non-pathogenic strain of the microorganism ..... in accordance with good manufacturing practices. (For label identification the source shall be indicated as B. subtilis, A. oryzae, A. niger, etc.)

"Crude ..... fermentation product is the dried material resulting from drying the total solids from a fermentation conducted for maximum production of enzymes using a non-pathogenic strain of the microorganism ..... in accordance with good manufacturing practices. (For label identification the source shall be indicated as B. subtilis, A. oryzae, A. niger, etc.)"

The Executive Committee expresses its thanks to all Committees and Investigators for their excellent work during the past year as evidenced by their reports.

LABELS

(Continued from page 82)

or antibiotics are present in the feed which he purchases.

The answer to the question is that, beginning Jan. 1, this committee is recommending that each antibiotic be listed on the feed tag. This means, of course, that the definition for "antibiotic feed supplement" will no longer have any usefulness; the committee is recommending its deletion from the list of definitions in our Official Publication for 1961.

3. Is the amount of each antibiotic to be guaranteed?

After considerable discussion, the members of the committee felt that eventually this will be a requirement, but we are recommending that it continue to be optional for the year 1961.

There is work to do before we are ready for mandatory guarantees for antibiotics at growth levels. We are hopeful that the drug industry will bring its 5 x 8 drug cards up-to-date with the minimum amounts needed to produce a response of growth and feed efficiency when these products are added to a feed.

Information in the hands of the Food and Drug Administration does not show clearly what are the minimum levels for response for all of the different antibiotics. It was the feeling, therefore, that before we can expect labeling on all of our feeds at growth promotion and feed efficiency levels, more information needs to be available to all of us as to what are the minimum levels for such an effect.

We feel that we should move toward this during the present year and that sometime in the future, perhaps in 1962, we may be able to state not only the names of the antibiotics, but also the amount of each.

For the coming year we will expect new registrations and newly-printed labels to name the antibiotics present, but guarantees of the amounts present will be optional with the feed manufacturer or distributor. On these labels, the registrant will be expected to place the name of the antibiotics in the list of feed ingredients instead

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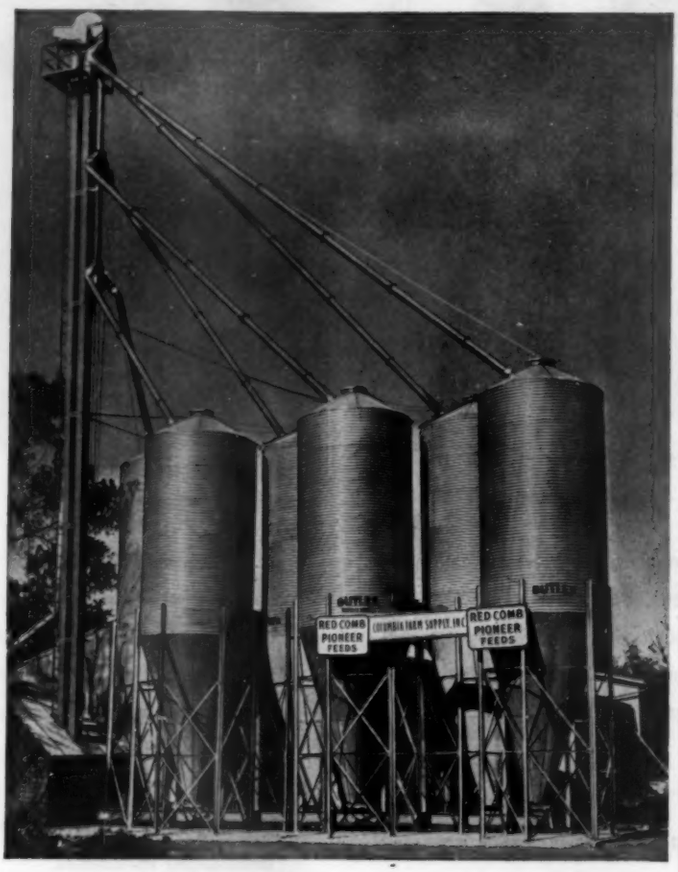

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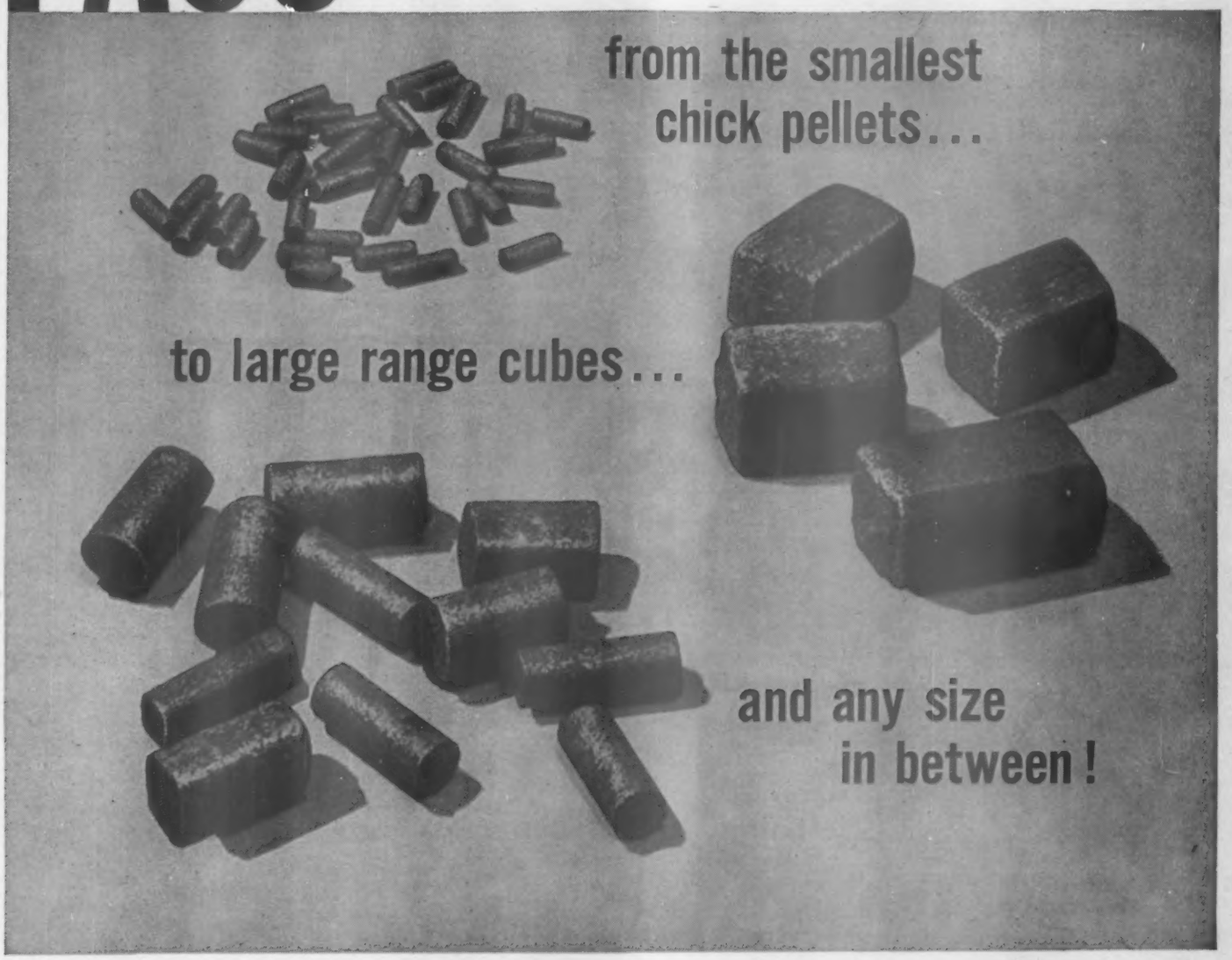

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of the present statement "antibiotic feed supplement." States will no doubt allow old labels containing "antibiotic feed supplement" to be used during the early months of 1961.

4. Where should the antibiotics be listed on the label?

Since the feeds under consideration are not "medicated" feeds, antibiotics at growth levels will not appear under the "active drug ingredient" statement. Also, the label will not include a purpose statement such as, "for increased feed efficiency and improved growth."

This represents no change from the present recommendations of the Official Publication of the AAFCO. Purpose statements will also not be included for oleandomycin and manganese bacitracin at growth levels. When the amounts of any of the antibiotics present are guaranteed, they should be listed under the "Guaranteed Analysis" section of the label along with vitamins, mineral elements and other guaranteed items.

Low levels of calcium in feeds to enhance the effect of an antibiotic (sometimes referred to as potentiation). The committee recommends that there be a stated figure of the amount of calcium on labels of feeds which are so designed. The question was discussed as to whether there should be maximum calcium levels or minimum calcium levels, but it was the general feeling of the membership that this would accomplish little.

It is recognized by the various laboratories which make such analyses that one must allow an analytical tolerance in checking the guarantee. The amount of such tolerance is up to the individual laboratory depending upon how well it can analyze for calcium in the feed.

The committee recommends, accordingly, that each of these feeds, where low calcium is an item of importance in connection with the effectiveness of the antibiotic, carry a single guarantee for calcium: e.g., 0.40% or 0.80%. Reference to calcium should not be included in the brand name or product name.

Status of "enzymes." Certain fermentation extracts bearing also the name of the micro-organism, for example, B. subtilis fermentation extract, have been defined and will appear in the Official Publication. They are not drugs and their use will not require a "medicated" label. This product name will not include the word "enzyme" and it is not expected that the word "enzyme" will appear in connection with the labeling on the finished feeds which contain the products.

What, then, is the status of enzymes? The 1960 Official Publication currently states that all enzymes other than pepsin are new drugs. This status continues unchanged, and any product which may come into consideration under the term "enzyme" will be considered a drug until some decision is made as to how it is to be classified under the federal and state laws.

Status of arsenicals and hormones in feeds which were not cleared prior to the Food Additives Amendment. The question was asked whether in the coming year there will be any change of status with respect to acceptance of registrations for feeds which contain hormones and/or arsenicals.

Since state laws do not differentiate between feed distributors who may or may not have obtained "prior sanction" it is expected the states will continue to accept registration for such feeds, generally, as in the past year. Of course, state registration will not guarantee that the feed is in compliance with federal law.

Distribution of medicated feeds in bulk. There has been misinterpretation by some readers of the required statement, "not for resale." The term is intended to mean "not for re-sale under another distributor's name." Therefore, it appears there is no conflict of view on the handling of bulk feeds by local vs. interstate manufacturers.

The latter may manufacture a bulk feed containing a drug such as stilbestrol, ship it to his dealer, and the dealer may then sell it under the manufacturer's name without relabeling or re-registering. In other words, a dealer may distribute the bulk product if he does so under the name of the manufacturer.

Progress with the 5 by 8 drug cards. The committee is pleased to see that so many of the industry as well as so many of the control officials are finding these cards useful. We do want to urge all drug manufacturers to make special effort to supply cards for all levels and combinations of drugs for which they have clearance with FDA. We also urge that revised cards be furnished promptly with all changes and new clearances which they obtain during the year.

It is suggested that drug manufacturers measure their drug cards to make them exactly 5 in. by 8 in. so that they will all fit into the same file.

Inspectors to record lot numbers of drugs. The drug industry has requested that state inspectors obtain the lot numbers of the products inspected and that the inspection report include the lot number of the product which was sampled. Since the industry maintains records on each particular lot by number, this will be helpful to them in their programs when a deficient lot is reported.

The committee recommends that all states attempt to supply this information.

Burlap Council Issues New Folder on Bags

NEW YORK—A new folder, "How to Care for and Cash in on Returnable Burlap Bags," is now available for distribution to the feed buying public. It was prepared by the Burlap Council staff, in cooperation with the bag trade.

This folder is being offered free to listeners of radio commercials throughout the middle and southwest areas. The council has enlisted the aid of those in the trade in the distribution of the folder.

Additional information may be obtained from the Burlap Council.

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CHAMPION'S new unit powered with a single Diesel engine in the truck chassis cuts operating costs 50% or more! Fuel consumption reported at one gallon or less per ton of processed feed—*including fuel used on the highway!* New design means less maintenance cost—provides more owner profits.

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New Hi-Fat MRB, a development of Borden's Nutrition Research Laboratory and Test Farm at Elgin, Illinois, now gives you more mixing flexibility than ever before in the preparation of economical calf milk replacers, calf starters and other specialty feeds that call for high fat content.

In addition to its palatable and highly-digestible whey solubles and soy flakes, the New MRB formula contains choice white grease to bring the fat level up to 15%. By having your extra source of animal fats evenly dispersed in a product that flows freely and mixes easily you can actually cut down on mixing time as well as your product inventory.

Borden's Hi-Fat MRB – as well as the regular MRB formula – are the only Milk Replacer Bases available to the industry. They are both higher than dry skim milk or buttermilk in protein, gross energy values and vitamins. Yet, in spite of their nutritional superiority, Hi-Fat MRB and MRB are significantly lower in price than other milk nutrient sources.

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SWINE

(Continued from page 10)

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"I'm predicting that within 10 years, one-third of our total slaughter will involve pigs weighing under 175 lb."

Dr. Garrigus explained that some advances must be made in feed efficiency, too. He reported that performance testing and selective breeding are two areas which can be studied for increased feed efficiency.

"Also, I believe that substantial progress is still to be made in swine nutrition. Lastly, as we intensify our hog production methods, we also increase our need for complete, foolproof disease and parasite control. Great strides have already been taken in this area, and more new, improved antibiotics will soon be available.

"In summary, we may expect our brood sows to be raising 25 pigs in 2½ litters per year in 1970. These will be weaned at 35 days and marketed at 135 days of age, weighing 170 lb. and yielding trimmed hams and loins approximating in weight those from our present 200 lb. hogs but surpassing them in tenderness and eye appeal. Each pound of gain will require only 2½ lb. of feed. Lower costs of production and processing will enable pork to 'slug it out' with broilers in the self-service meat market, with average per capita consumption of pork rising 20% to an average level of 78 lb. annually."

Reports that follow were presented and discussed in the nutrition and feeding workshop session:

EFFICIENCY GOALS IN SWINE PRODUCTION—"Efficiency of swine production involves more than just the amount of feed required to produce a pound of gain by the growing-fattening pig from weaning to market weight," said John F. Lasley, department of animal husbandry, University of Missouri.

"It also includes the amount of feed required to maintain the sows during gestation and both sows and pigs during the lactation period. Efficiency of production and feed utilization involves nutrition, management, disease control and breeding."

Efficiency of sow performance is important, too, said Dr. Lasley. The size and weight of the litter weaned plus the amount of feed required to produce that litter is a good measure of sow performance. Considerable research has been conducted on this particular subject and rations have been devised that contain the proper

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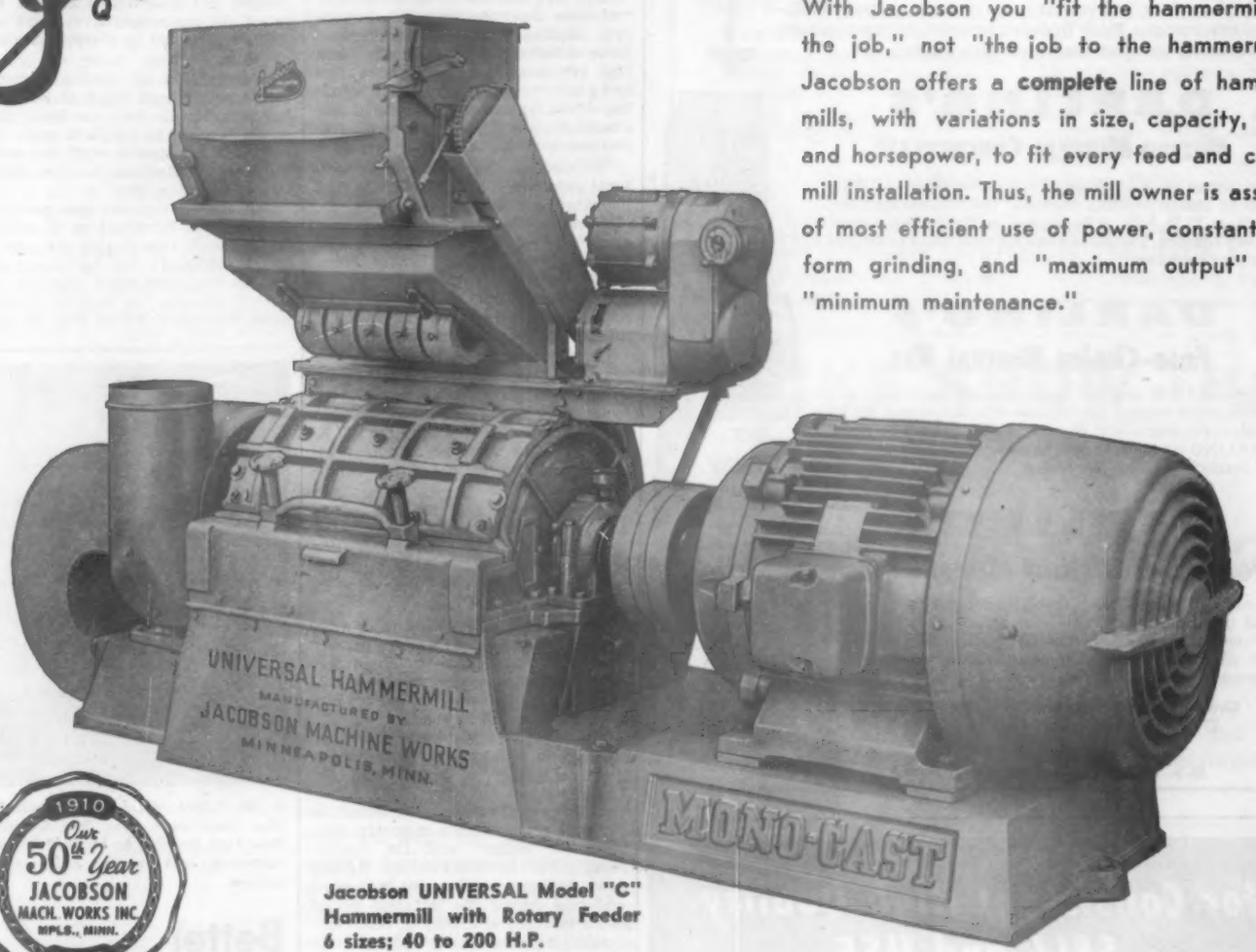

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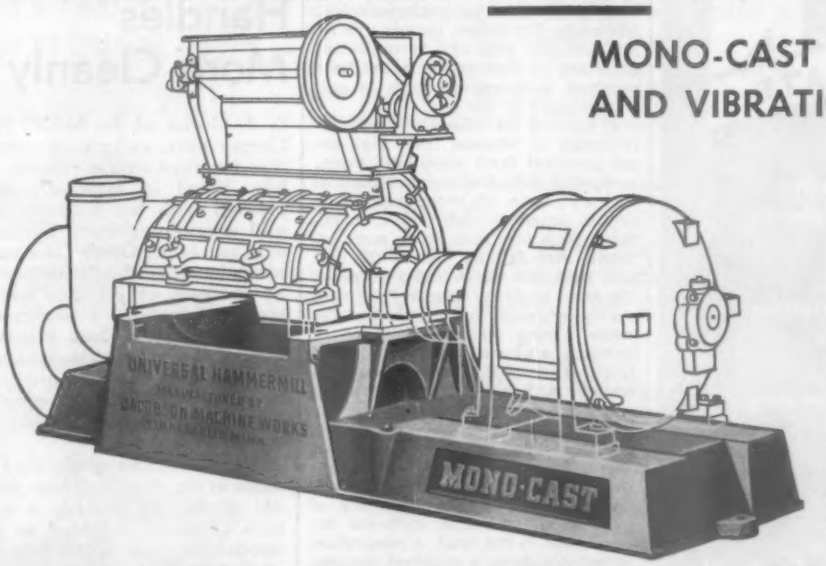

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quantity and quality of nutrients for both sows and pigs during this period. More complete rations are more efficient than those which lack some of the required nutrients.

"Research work concerning the weaning of pigs before they are eight weeks of age has focused attention on the possibility of reducing feed costs for both sows and pigs," he said. "Early weaning has some advantages and some disadvantages; but, in general, studies indicate that there is little difference in feed costs when pigs are weaned at one, three, five and eight weeks of age. Early weaning would be more economical if less complicated and less expensive prestarters and starters were available.

"Studies at the Missouri agricultural experiment station indicate that inheritance definitely influences the efficiency of sow performance. In a study with sows of three inbred lines and a cross between two of these lines, there was a significant difference between lines in sow performance. Feed costs were 13.5% lower in one line than in another."

Dr. Lasley said he believes that a systematic crossbreeding program involving the use of three or more selected breeds or lines would improve litter weight at weaning by 35 to 40% over the average of non-crossbreds under practical farm conditions.

A reasonable goal for sow efficiency, he explains, would be an average of 9 to 10 pigs weaned per litter on all farms in the U.S. with an average pig weight at 56 days of 40 to 45 lb.

Improving efficiency of feed utilization from weaning to market weight is another goal. There has been a great improvement in this area in recent years, but much more progress can still be made.

"In summary, we have five goals to keep in mind as we work to improve efficiency of hogs," said Dr. Lasley. These include:

1) Improved rations—"Research on nutrient requirements is pretty complete for swine," said Dr. Lasley. "But more information on feeding sows during gestation and both sows and pigs during the lactation period could increase efficiency of feed utilization. Also, improved rations from the standpoint of nutrient balance plus a higher energy content could also increase the efficiency of feed utilization."

2) Improved methods of feeding—Attention to such factors as palatability of rations to increase daily feed consumption may increase feed efficiency. Controlled temperature and humidity may also be important especially in regions where the temperature is excessively high in certain seasons of the year.

3) Control of disease—The performance of "disease free" pigs under practical farm conditions, promises much for attaining our goals if this system of swine production proves practical under farm conditions. Such pigs may be no more efficient than healthy pigs at the present time, but the overall average on the farm could be improved to more nearly approach that attained at the swine testing stations. Selection of breeding animals within "disease free" stock could improve our accuracy in finding those individuals which are genetically superior.

4) Through selection and breeding methods—Feed efficiency in swine is about 30% heritable which means that the selection of breeding stock on the basis of their efficiency of gains should result in moderate improvement in this trait. A comparison of individuals on a standard environment and under individual feeding where feed wastage is at a minimum might cause the realized heritability to be higher and more improvement may be made.

5) Marketing of pigs at lighter weights—The heavier pigs become, the more feed they require to make a pound of gain. The actual amount varies under different conditions, but 200 lb. pigs require about 5% more feed per pound of gain from weaning to that weight than do 150 lb. pigs.

FEED-GRAIN AND SWINE PRODUCTION PATTERNS—"Our production of feed grains has increased by spurts," said L. H. Simerl, agricultural economist at the University of Illinois. "These spurts have been caused by weather, technological advances, and government actions. The latest of these spurts, in 1958 and 1959, was caused by a combination of all three factors.

"Percentages of corn and barley have not changed much in 30 years, but a decline in oats has been offset by an increase in sorghum grain. The corn belt has spread north and south, but corn production has not moved out of the corn belt."

Mr. Simerl explains that pork production has increased at a surprisingly steady rate during the past 60 years. Although the increase in pounds has been quite constant, the rate of increase has been cut sharply, especially since World War II, when

J. W. (Joe) Ward, Jr., President of Wm. Hamilton & Sons, Inc., Caledonia, New York, standing by his 9x18 Roskamp, operating with motor and magnetic scalper.

Better Absorption of Molasses—Handles More Cleanly

E. J. Cecka, of the MMC Sales Corporation, sales representative for Roskamp's, reports that Mr. Ward is extremely well-pleased with his machine. The mill is crimping about 135 bu. of oats per hour. Dairy feed customers have gradually demanded an increase of crimped oats in their rations and a decrease in crushed or pulverized. His feeds now show better absorption of molasses and handle more cleanly on his pneumatically equipped bulk feed truck, due mostly to a reduction of dust.

Roskamp makes grain roller mills in six sizes and four different models to provide a roller mill especially adapted to your needs. The solid white iron rolls in every Roskamp grain roller mill are guaranteed for ten years.

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it was only one-third as large as the increase in population.

"Hog production has become relatively more concentrated in the corn belt, especially in the north-central states north of Missouri and the Ohio River," Mr. Simerl added. "The cyclical tendency in hog production has become more pronounced since World War II, probably because of the fixed price of corn. Finally, the seasonal variation in pork production has been greatly reduced."

Thirty-five years ago (1922-1926) hog slaughter increased 53% from the low August-October quarter to the high November-January quarter. September was the low month, with only about half as large a kill as December. The quarterly kills were 24, 23, 21 and 32%. Quarterly slaughter as a percentage of the annual total ranged from 21 to 32%.

By contrast, quarterly percentages in 1958 were 26, 23, 24 and 26, so the range was only 23 to 26%.

NUTRITION AND FEEDING PROBLEMS OF PRODUCERS—Hog grower George Brauer, Oakford, Ill., reported to conference listeners on farm developments that have taken place in hog feeding.

"About three years ago," said Mr. Brauer, "farmers started feeding corn-bean meal rations mixed right on the farm. This development was slow for several reasons.

"First, many feeders waited to see if their neighbors could do it successfully. Second, a capital investment was necessary for equipment that would mix and grind rations. Third, and probably most important, we often paid too much for bean meal, vitamins, minerals, and antibiotics so that the margin of profit was small as compared to using other supplements."

The next step was obvious, said Mr. Brauer. A group of hog producers in the area organized a cooperative feed company for the purpose of buying the necessary ingredients "at a better price."

Several developments that Mr. Brauer says brought about this change in feeding hogs were listed as follows:

"1. Research on fortification of corn-bean meal rations. Much of this work is not new. We have been slow in making use of the information that has come from this research.

"2. Development of equipment that will mix and grind rations efficiently. The lack of such equipment has held up this development.

"3. The trend of hog operations to become larger. Of course a volume is necessary before a hog farmer can afford to go to on-the-farm mixing equipment. The hog operation that has enough volume to be efficient should be large enough to make on-the-farm mixing pay off. The manager of such an operation should be capable of mixing his own rations."

Mr. Brauer said that there now are nine cooperatives in Illinois and several in other states which are similar to the group in which he is involved.

He went on to comment on other developments. For one thing, he said, work is being done on feeding cooked soybeans to hogs. He said that this may come into the picture, especially if the price of oil continues to be low.

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SYMPOSIUM

(Continued from page 11)

both normal and high gram/ton levels with additions of TPA and phosphorus and the reduction of calcium."

Dr. Luther noted that calcium reduction for the present is the lowest cost method of potentiating antibiotics, but he warned that other nutritional considerations allowed no simple course of action.

Urges Exploration

He urged continued exploration of different potentiating methods "because all offer considerable promise." The long range problem, he said, was the isolation of the method or methods that give the maximum potentiating effect at minimum cost.

Explaining the significance of antibiotic potentiation, Dr. Luther said that "enhancement of antibiotic effectiveness through greater biological availability would make it possible to use medicated feeds for the treatment of many animal diseases outside the scope of the antibiotics because of cost factors."

Fowl cholera and coccidiosis were both cited as examples of diseases that can be controlled with antibiotics in unusually high gram/ton levels and, therefore, at relatively high cost. Potentiation of antibiotics, he said, would make it possible to use the drugs in medicated feeds to control such diseases at a reasonable cost.

The second International Animal Feed Symposium, at which Dr. Luther delivered his paper on potentiation, was held under joint sponsorship of the Soybean Council of America and the U.S. Feed Grain Council in conjunction with the Foreign Agricultural Service of the U.S. Department of Agriculture.

AMINO ACID

(Continued from page 14)

made to balance excess amino acids in order to get use from them.

No longer, he said, can it be assumed that excess amino acids do not hurt performance in the chicken; a stress may be caused.

There is a delicate balance between energy and protein or amino acids, he emphasized.

Summaries of other presentations follow:

PROGRESS IN SWINE BREEDING AND NUTRITION — Progress which has been made in both swine breeding and feeding was pointed out in discussions and a demonstration by Dr. H. F. Tucker, associate professor of animal husbandry at Auburn, and Ray Cavender, extension specialist in meat marketing. They outlined various recommendations which are made, and they cited the opportunities for feed men as well as producers in an expanded and efficient swine industry in Alabama.

Dr. Tucker noted that some of the fads and the extremes of the past have disappeared and that all interests now are working together for better production of a better product.

Looking to the future, Dr. Tucker predicted such things as these:

1. Larger operational units, requiring more capital. More specialization in swine production, including purebred operators, feeder pig producers and growing-fattening operations. Use of more equipment. Better management, with good records on production costs and profits. Some units, said Dr. Tucker, will cost hundreds of thousands of dollars.

2. Management practices will include more confinement operations, including breeding. There will be production line housing, multiple farrowing, earlier weaning (3 to 5 weeks), more control over environment and increased automation, such as in feed proportioning.

3. Nutrition developments will include greater use of specific rations,

as for stress and different stages of growth. There will be lower protein levels and better amino acid balance; more efficient use of additives; improved gestation, lactation and starter rations; use of enzymes and hormones; more emphasis on nutritional interrelationships.

4. In breeding, there will be increased production and progeny testing; emphasis on efficiency, growth and leanness; more synchronized breeding.

Citing expansion possibilities in swine, Dr. Tucker observed that one million hogs could mean use of 335,000 tons of feed, including 67,000 tons of supplement.

Mr. Cavender emphasized that the feed industry as well as educators and others should be strongly recommending improvement in pork quality, aiming at production of the "consumer-type" hog—a hog whose carcass produces cuts highly acceptable to the consuming public.

He noted that producers are asking such questions as these: What breed is best? How do I get meat-type? Does method of feeding make a difference? Can I produce meat-type hogs cheaper? When should I market?

Mr. Cavender said that there is no miracle breed of hogs which will answer all problems. There are differences in breeds, some economically significant, but in a market hog program breeds should be combined which will give greatest degree of performance and meatiness.

The true meat-type hog, he said, is a product of breeding and selection and will respond with increased gain, better efficiency and a higher percent of lean cuts when exposed to a balanced ration. He cited Ohio tests in which five litters with most fat trim required 365 lb. of feed per 100 lb. of gain, while the five litters with the least fat trim required 339 lb. of feed per 100 lb. of gain.

Boar cost is the only extra expense in producing consumer-type hogs, Mr. Cavender said, and he listed data which illustrate that this is offset several times over by savings in feed, better performance and higher prices for better quality.

Commercial producers should consider use of performance-tested brood stock, Mr. Cavender continued.

Research from many sources, he said, shows that crossbreeding pays off, with the extra benefits resulting from "hybrid vigor," expressed in more rapid gains and slightly larger litters. He recommended rotational crossbreeding using two or three breeds.

Mr. Cavender put particular stress on marketing at correctly finished weights. The modern hog is bred to utilize high energy and correctly balanced rations, but even well-bred hogs will wind up on the fat side if fed too long.

He noted that fat is deposited at a much faster rate after 200 lb., and he cited detailed data showing that feed costs increase when hogs are carried to heavy weights. "Many believe," he said, "that the fatter the pig, the more efficient the gains, but this just isn't true." Mr. Cavender also showed how carcass quality and market grade decrease at heavier weights.

"When we consider the effects on feed efficiency, carcass quality and grade of carrying hogs to weights heavier than 200-220 lb.," he said, "it appears that recommending marketing at 200 lb. is sound for the entire swine industry."

Dr. Tucker and Mr. Cavender also presented a dramatic illustration of differences in carcass quality. They showed carcasses and cuts to illustrate the differences between a U.S. No. 1 carcass and a No. 2 or high No. 3 carcass. Comparative figures follow:

U.S. No. 1 Carcass

Carcass weight	135 lb.
Est. live weight	200 lb.
Back fat thickness	1.3 in.
Carcass length	30.5 in.
Weight of ham	14½ lb.
Weight of shoulder	12½ lb.
Weight of loin	11¾ lb.
Per cent lean cuts	57.8%
Per cent fat trim	17.4%
Actual carcass value	$32.10 cwt.
Est. live value	$21.67 cwt.

U.S. No. 2 Carcass

Carcass weight	124 lb.
Est. live weight	180 lb.
Back fat thickness	1.8 in.
Carcass length	27.5 in.
Weight of ham	11¾ lb.
Weight of shoulder	8½ lb.
Weight of loin	8½ lb.
Per cent lean cuts	46.6%
Per cent fat trim	25.8%
Actual carcass value	$28.58 cwt.
Est. live value	$19.72 cwt.

TRACE ELEMENTS IN RUMINANT NUTRITION—The complexity of mineral nutrition and the need for more information on this subject were pointed out by Dr. George K. Davis, University of Florida nutritionist.

In considering mineral requirements of ruminants, he said, it is not possible to set up specific requirement levels of copper, cobalt and other trace elements so that a chemical analysis will give a satisfactory evaluation of a feedstuff. There are many interactions and balances and, in fact, many organic factors would seem to enter into the total picture. Until such are properly evaluated, said Dr. Davis, the mineral requirements of cattle, especially in terms of the trace elements, must remain a rather complicated problem.

Actually, he said, when it comes to mineral nutrition, we are at about the same place as vitamin nutrition was 30 years ago.

When one thinks of one mineral, Dr. Davis noted, it is necessary to think of other mineral requirements. In addition to mineral interactions, the level of protein appears to have something to do with mineral nutrition. Nitrogen compounds seem to be sequestering agents, the Florida scientist indicated.

Outstanding among the mineral deficiencies which occur in cattle and sheep is that of cobalt. There are a few areas where cobalt is present in the pastures, but by and large, unless cobalt has been used as a supplement, occurrence of a borderline deficiency is almost certain, Dr. Davis said.

The development of vitamin B_{12} deficiency, or cobalt deficiency, is not sudden or acute, but rather is a chronic development. A cobalt deficiency can be subclinical, and the only result will be a reduction in performance.

Cobalt deficiency so closely resembles parasitism, and is so often associated with parasitism, that it may be overlooked if not specifically investigated, Dr. Davis said.

He said that use of the so-called cobalt bullet is a very successful way of giving cobalt but that its use must be evaluated in terms of economic advantage. If it is necessary to feed other mineral supplements, he said, it may be more economical to include the mineral in feed.

Dr. Davis also commented on the copper deficiency problem, noting that there are many areas where there may be a borderline deficiency. Copper deficiency results first of all in anemia, which is demonstrated by the fact that cattle with a deficiency often develop livers extremely high in iron. This probably is caused by the fact that copper is necessary for activation of the enzyme system which incorporates iron into hemoglobin. The normal copper requirement for cattle is around 5 ppm, and many pastures are borderline in their content.

Dr. Davis also commented on the influence of molybdenum, noting that where high molybdenum occurs, there will be copper deficiency, even though the level of copper appears adequate. Enough copper must be supplied to counteract this effect.

He noted, too, that there are a number of other elements which have to be considered in evaluating ruminant trace element requirements, although they may not be a particular problem in most areas. These include iodine, manganese, sulfur and magnesium.

FACTORS AFFECTING LEVEL OF CONCENTRATE FEEDING—Dr. K. M. Autrey of Auburn discussed various factors involved in concentrate feeding of dairy cows. He pointed out that the practical level of concentrate feeding will depend on a number of factors, including inherent producing ability of the cow, quality of roughage and relative cost and value of feeds and milk.

Dr. Autrey's remarks included mention of pelleting, including research indicating effects on fat test, and he said that considerable research is needed in the general area of pelleted concentrates and forages for dairy animals.

Consideration, he said, must be given to improved feeding standards, perhaps based on net energy, rather than the TDN system of calculating rations. Currently used standards tend to result in underfeeding cows of high-producing ability.

A SOUND CALF FEEDING PROGRAM—The first six months of a dairy calf's life are the most important period of growth, said Arthur H. Winter, field research leader, research and development division, National Dairy Products Corp., Danville, Ill. A calf that is vigorous and well grown at six months is more likely to develop into a larger, better, more useful dairy cow.

When a dairyman feeds his calves and heifers properly, he should expect good growthy heifers at 20 to 24 months of age, said Mr. Winter. Earlier calving can then be expected, and this can mean an extra 6,000 to 9,000 lb. of milk as compared with waiting until the heifers are 30 to 32 months of age.

Mr. Winter made these recommendations: The calf should get colostrum the first three days. Young calves may be taught to drink from a nipple bucket. It is important that feeding equipment be kept "kitchen clean." Calves should be raised separately until at least one week after milk replacer is discontinued. Usually six weeks is the safe age at which milk replacer may be replaced entirely by a calf starter, grain mixture and roughage. Ten calves should be the maximum number raised in one group. Maximum age difference among calves in any group is four weeks. Calves may be turned out to pasture after four months, but they should continue to get their usual feed. Good quality hay should be fed from the start; hay helps in rumen development. Silage may be fed after six months of age.

Mr. Winter said a good replacer should be very low in fiber and have high nutritiopal value, including dried milk solids and fat. He recommended that a replacer be composed of milk products, saturated fats and lecithin, along with added fat soluble vitamins A, D and E; B vitamins; an antibiotic; trace minerals, and adequate calcium and phosphorus.

Mr. Winter said that many farmers report better results with milk replacer than with their old whole milk feeding programs.

He suggested that a young calf be fed a good 18% calf starter, with access to salt, plus a good mineral ration. Not more than 4 lb. of grain should be fed per day.

OTHER ACTIVITIES—One of the features of the conference was a banquet at which Merlin Bryant of Brundidge, Ala., was master of ceremonies. Another special event was a luncheon provided by the Block and Bridle Club at the College. Dr. Claude Moore of the poultry department conducted a tour of research facilities, and a special event was sponsored by Dorn & Mitchell Laboratories.

Dr. Fred Robertson, associate director of the extension service, told a luncheon meeting that the feed industry has a vital part in improving Alabama's agriculture and that one of its main jobs is education. The industry, he said, has come a long way from strictly selling to education also.

The industry, college people and others all must work together to generate more income from the land, people and capital in the state.

Speaking of extension work, he said the extension worker no longer is a narrow technician but is a broad minded person who has management orientation. He is not an educationally trained technician but is a technically trained educator.

Presiding at the conference sessions were John P. Weeks, Cosby-Hodges Milling Co., Birmingham, former association president, and G. B. Phillips, extension specialist.

Poultry, Egg Controls

SOUTHERN PINES, N.C.—A resolution calling for a national production control for poultry and eggs "similar to the program now being administered in the flue-cured tobacco production control program," was adopted by the N. C. State Grange in its closing floor session here Oct. 26.

Details of how such a poultry program would work were not spelled out, either in the resolution or by proponents during the floor debate.

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Nitrogen Poisoning Of Cattle Danger Less Than Believed

BUFFALO, N.Y. — The danger of cattle being poisoned by nitrogen fertilizers is not as great as has been believed, feed manufacturers were told at the Cornell Nutrition Conference.

Dr. W. Keith Kennedy, director of research, New York State College of Agriculture at Cornell University, told representatives at the conference that presently accepted minimum levels of nitrate are too low. He cited a series of Cornell experiments showing cattle can tolerate relatively large doses of nitrate in their forage without harmful effects.

Dr. Kennedy said there is a "remote possibility" such poisoning might sometimes occur in the Northeast. "The only time nitrate poisoning might develop would be when nitrogen-accumulating plants such as oats and corn are very heavily treated with nitrogen fertilizer just before a severe drouth," he declared. "It should be recognized, however, that such conditions frequently do occur in the Great Plains and middle western states."

The Cornell research director told the group nitrate poisoning may be influenced by a variety of factors including the type of ration consumed, the animal's physical condition, age of the fetus and chemical composition of the forage. He also said many widely-used experimental methods for administering nitrate may not show toxic levels as accurately as has been thought, listing these methods as the drench, capsule, stomach tube and the process of mixing nitrate with grain or milk.

Dr. Kennedy warned against possible dangers of nitrogen oxides released when high-nitrate forage is put in silage. "A number of deaths and serious injuries to both humans and animals from silo gases have been reported in several states. Farmers ensiling oats, corn and other nitrate-accumulating crops should be extremely cautious to avoid silo gas poisoning," Dr. Kennedy stated.

"Considerable more fundamental research on nitrate poisoning is needed before definite recommendations on lethal and sublethal levels can be made," he said.

Dr. Kennedy presented his conclusions in a paper prepared by himself and a graduate student, Robert F. Crawford.

Dr. John M. Kingsbury, department of botany, Cornell University, reviewed some of the recently discovered toxic relationships of plants with animals in his talk entitled "Poisonous Plants of Particular Interest to Animal Nutritionists." He commented that "they are of interest not only of themselves, but also as serving considerably to broaden the usual concept of the nature of a poisonous plant."

TWO PROMOTIONS—Two appointments to managerial posts have been announced by John Morrell & Co. for its Foxbilt Feeds and Ames-In-Cross poultry operations headquartered in Des Moines (Feedstuffs, Oct. 29). Wayne A. Rodgers, left, has been named general manager of the Foxbilt and Ames-In-Cross operations, according to W. W. McCallum, president of John Morrell & Co. J. K. Lepley, right, will be assistant general manager as well as sales manager of the Foxbilt operation. Mr. Rodgers replaces E. L. Fox who resigned from the management of the firm but continues as a director of Morrell's feed division. Both Mr. Rodgers and Mr. Lepley have been in the Foxbilt organization for approximately 12 years.

WASHINGTON

(Continued from page 16)

tritionist, Pullman, "Economy of Pelleting Feeds for Ruminants," "Effects of Concentrate to Roughage Ratio on Performance of Cattle," and "Enzymes and Kelp for Cattle."

Dr. T. H. Blosser, dairy scientist, Pullman, "How Feeds Affect Milk Composition" and "Nutritive Value of Milk Replacers Containing High Levels of Whey."

Dr. James McGinnis, chairman, poultry science department, Pullman, "Factors Influencing Antibiotic Usage in Feeds" and "Use of Full-Fat Soybeans for Growing Turkeys."

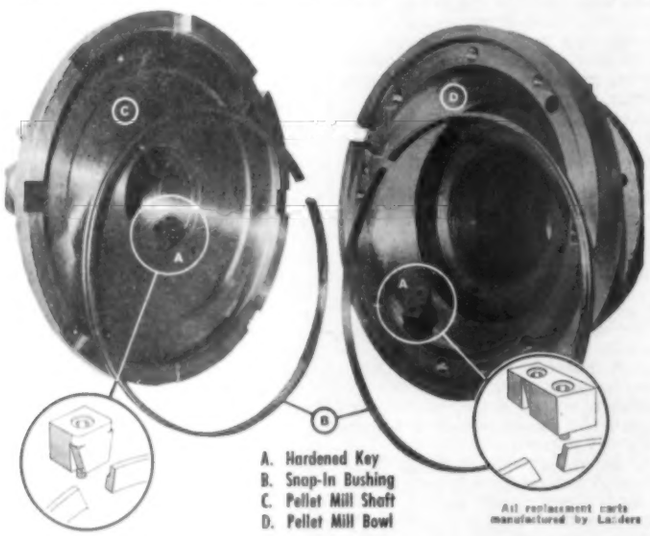
Dr. F. R. Murdock, WSU dairy scientist, Puyallup, "Effect of Feeding Antibiotics on Milk Production and General Health of Dairy Cows."

G. E. Bearse, poultry scientist, Puyallup, "The Problem of Egg Shell Quality."

Dr. Leo S. Jensen, poultry scientist, Pullman, "Unidentified Factors for Reproduction" and "Calcium and Phosphorus Requirements of Developing Turkeys."

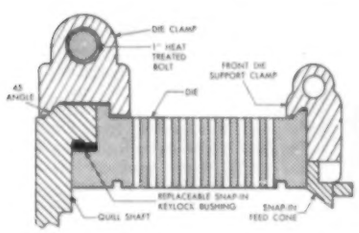
Dr. L. R. Berg, poultry scientist, Puyallup, "Fish Meal for Broiler Feeds."

NEW! Landers Snap-In Keylock Bushing saves 75% of pellet die assembly maintenance cost, practically eliminates downtime!



Now you can eliminate long, costly periods of downtime caused by pellet die wear on standard die housings. New Landers Snap-In Keylock Bushings help maintain tight die fit at all times, eliminates flex of the die which eventually causes die breakage and housing wear. The Bushing absorbs the wear and is easily replaced in just fifteen minutes at a fraction of the cost of conventional methods. Your present standard housings may be adaptable!

NO MORE DOWNTIME THAN THE TIME IT TAKES TO CHANGE PELLET DIES!



Cross-section shows Snap-In Bushing in Quill Shaft assembly. Note new Landers heavy clamps for better die support, longer life for mills up to 125 HP. Snap-In Bushing eliminates studs, driving rim and lost-downtime. 45° angle on die clamp prevents excessive spread on front leg of die clamp.

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MFA Signs Contract For Grain Elevator

COLUMBIA, MO. — The Missouri Farmers Assn. announced that it has signed contracts for construction of a 2,100,000 bu. grain terminal elevator in North Kansas City. Construction is to begin as soon as the contractor can begin work, according to Carlos Bradley, manager of the MFA grain and feed division in Kansas City.

The elevator will be on a 15 acre tract along the Missouri River water front with access from the U.S. Highway 71 by-pass.

Construction will be of reinforced concrete.

The facility will be operated by the MFA grain and feed division, which operates elevators at Louisiana, Mexico and Lamar, Mo.

PREDICTIONS

(Continued from page 1)

The number of chickens raised for replacement purposes during the calendar year 1961 is expected to increase by 10% for a total of 373 million.

Commercial broiler production for the calendar year 1961 is expected to total 1,925 million, an increase of 7% over 1960.

An estimated 88 million turkeys will be raised during 1961. This figure represents a 7% increase over 1960, most of which will be with heavy rather than light breeds.

Another beef cattle increase—Beef cattle numbers are expected to increase 4% during 1961. Cattle slaughter is likely to increase by 5-10% over 1960 in the year ahead. Of the 27 million cattle expected to be slaughtered in 1961, around 14 million head will be grain-fed steers and heifers.

Hog expansion — An estimated 54 million pigs will be produced in the spring of 1961. That's 10% more than the 49,103,000 produced in the spring of 1960. The 1960 fall pig crop is estimated to be 41,500,000 head—4% less than the pig crop of the preceding fall.

Dairy cow trend changing — The number of cows to be milked in 1961 has been estimated at 19,400,000. The committee notes that the downward trend in cow numbers has leveled and may turn up slightly in 1961.

Slight sheep expansion—The total number of sheep and lambs is expected to grow 1-2%. Generally favorable feed supply conditions throughout the country should result in some improvement in percentage of lambs raised and put on feed.

Slightly fewer horses—For horses and mules the Feed Survey Committee sees a slight reduction in numbers for the 1960-61 feeding year. The increase in light horses and pleasure ponies will nearly offset the continued decline in work stock, resulting in only a 2% estimated decrease in total numbers.

Near-record production of grains and oilseeds in 1960 plus record stocks of corn and sorghum grain are expected to provide plentiful supplies of feed for the 1960-61 feeding year. But feed use in the U.S. will be higher during that period than during the previous one. This is a continuation of the upward trend of recent years.

This anticipated larger use, notes the committee, is in close balance with available supplies of oilseed meals and other high-protein feeds. Grain supplies are more than adequate, however, to take care of the expanding feeding operations.

The calculated feed balance for the year ahead indicates high-protein feed use to be within 1% of estimated supplies. The excess of grain supplies is calculated at more than 50%.

The 193 million tons of grains, oilseed meals and other concentrates available for feed in the current year compare with about 150 million tons fed last year.

The 1960 corn crop is nearly as large as last year's record crop. Grain sorghum production is within 1% of the 1958 record crop. The oat crop is 10% larger than 1959's small crop, but still below average. Barley production is relatively large again this year.

Total tonnage of feed grain production is only slightly below last year's record. In addition, the carryover of old-crop corn and sorghum grain on Oct. 1, 1960 reached a new high level of 2,380 million bushels, nearly 350 million bushels more than a year earlier.

Soybean production for 1960 is estimated to be 4% above last year and the second largest crop of record. The cottonseed crop is as large as that for 1959. Supplies of meal from the major oilseed crops available for feed are about 3% larger than the amount fed last year.

Pastures generally in the fall of 1960 are reported to be better than last year and the average. Hay production is 5% above last year, with considerable late season improvement.

The committee, whose chairman is Dr. C. W. Upp, director of Louisiana State University's Agricultural Experiment Station, explains that its estimates of supplies for feed are arrived at after allowing for exports and imports, industrial and other non-feed uses and reasonable carryovers of grains.

Feedlot Expansion

The group of forecasters says beef cow numbers will increase 3% in 1961 and beef feeding operations will expand about 8%.

The slight increase in dairy cows and a 1% rise in milk per cow will result in somewhat more total milk production. Increases in cow numbers in fluid milk areas are offset to some extent by declining numbers in other areas.

Young dairy stock is increasing in number. The number of heifers 1-2 years old is expected to increase about 2½% over 1960, and the number of heifer calves under 1 year old is likely to increase approximately 4% over 1960.

Total milk production of 127.1 billion pounds expected for 1961 would be an increase of slightly more than 1% over 1960.

Dairy roughage is plentiful in most sections of the country. Concentrates are in abundant supply and are available at more favorable price ratios. It is estimated that the feeding rate will be 2,200 lb. per cow, an increase of approximately 3% over 1960.

JAMES MURPHY

(Continued from page 1)

of Wisconsin's College of Agriculture in 1910 and graduated in 1914, with a B.S. degree in agricultural journalism. For a short period immediately after graduation, he taught high school physics, chemistry and vocational agriculture in Freeport, Ill.

He then became the first county agent in southern Wisconsin in 1915-1916 after which he assumed the managership of the large Tilden Farms at Delavan, Wis., until 1922.

It was there at Tilden Farms that Mr. Murphy developed, in cooperation with nutritionists and animal husbandrymen at the university, his mineral feed for livestock. It proved successful and grew in demand. In 1921 Mr. Murphy and his brother, Lawrence Murphy, formed the Murphy Products Co. to manufacture this mineral feed, said to be the first of its kind ever produced. They incorporated their company in 1922.

In 1927 the Murphy Products Co. licensed the first protein, vitamin, mineral concentrate feed for poultry ever licensed in the U.S. The business grew and was brought from Delavan to Burlington.

Mr. Murphy had been very active in civic affairs ever since that time, giving freely both of his time and effort, and encouraged his staff to do likewise.

He was supporter of 4-H Club activities since their beginning in Wisconsin and in 1954 was elected the first president of the board of directors of the then newly incorporated Wisconsin 4-H Foundation.

Mr. Murphy married the former Mildred Emery in 1915. She died in 1936. Mr. Murphy is survived by his present wife, the former Margaret Dempsey, whom he married in Chicago in 1937, and his daughters, Mrs. Mildred Ryan, Highland, Ill.; Mrs. Helen Peters, Burlington; Joan, Joliet, Ill.; Judy, a student at the University of Wisconsin, and Jeanne, student at St. Mary's Grade School, Burlington. Mr. Murphy had six grandchildren.

Also surviving are a sister, Mrs. Harry Scheibe, Burlington, and his brother, Lawrence E. Murphy, who is secretary-treasurer of the Murphy Products Co.

A James H. Murphy Memorial has been established at Memorial Hospital in Burlington.

REJECTIONS

(Continued from page 1)

than 1.7% were rejected. Over-all, rejects amounted to a maximum of 3.9%.

There is one USDA report, however, that fans the flames of rumor. One lot of 10 turkeys revealed a reject factor of 50%.

USDA reported this week that inspection rejections for the entire turkey industry amount to not more than 1.57% of all birds presented for slaughter.

Conclusion

After two weeks of examining reports covering turkey inspection condemnations, this writer concludes that false rumors have tended to disrupt turkey marketing channels to the detriment of responsible producers.

Gossip heard by USDA officials lead them to believe that condemnations recorded for small turkey flocks are the result of the producer being indiscriminate in his selection of breeding stock or being sloppy in his management practices.

MARGIN

(Continued from page 1)

Bank of Boston, was based on this question: "What would happen if feed dealers offered widely advertised cash prices—stripped of all services and frills—with the margin between cash and credit such as to induce responsible poultrymen to turn for credit to institutional lenders rather than to the feed industry?"

Richard Warren, New Hampshire extension poultryman, introduces a reprint of the bank publication's article with the observation that "all signs point toward another (poultry business) 'bust' in the making."

He says optimism is running high in the poultry industry these days. "Interest in production controls, unions, credit restriction, etc., seems to have died as soon as egg prices recovered," Mr. Warren comments. "It is nice to see some black figures on the balance sheets again, but we must not forget that the basic problems that caused the low prices of 1959 are still with us . . . Hatcheries are, in many cases, sold out well in advance, and the recent placement figures are really alarming. These chicks will soon become layers.

What's the Answer?

"When the next 'bust' comes, the pressure for industry controls and other emergency programs will be greater than ever. What is the answer? Credit control offers a possibility. If this type of program is to work it must be started now when prices are good — not six or eight months later when we are again in an egg-price depression." He says, in the University of New Hampshire bulletin, "Combings," that the article from the Boston bank presents such a proposal.

The quoted article says: "Even the feed industry itself seems agreed that too liberal credit, primarily extended by feed dealers and manufacturers, has contributed to repeated cycles of over-production with resulting losses to both producers and dealers . . .

"Because the posted margin between cash and credit was insufficient inducement for poultrymen to seek institutional credit, the feed industry has done an increasing volume of the financing.

"Institutional lenders have not been aggressive in seeking poultry loans for several reasons, but principally because the returns have not balanced the costs nor the hazards. At comparable rates, poultry loans are less attractive than other farm loans."

Adoption Obstacles

The Federal Reserve Bank of Boston believes there are many obstacles in the path of broad adoption of the credit-cash price margin proposal. "Not the least is the need to induce institutional lenders to be more aggressive in the poultry-financing field," the article said.

The bank suggests that an interest schedule, "perhaps at higher levels than those prevailing on other types of agricultural loans," might be worked out "to rekindle the earlier activity in this field."

The bankers ask, "Is it not possible that some means could be worked out whereby farmers currently using large amounts of dealer credit could be gradually shifted to institutional lenders, thereby allowing lenders to develop confidence in the borrower while sharing the credit risk with the dealer?"

They recall that "the fertilizer industry many years ago offered a 10% discount for cash" and the saving "was effective in shifting credit to conventional sources."

ILLINOIS

(Continued from page 1)

sus stagnation, time management versus indecision, money management versus loose credit and sales management versus unaggressiveness. An imposing list of speakers discussed these issues as they apply to sound operations in the feed and poultry industries.

Carl Rylander, Kauffman Feed Mill, Waterman, Ill., was elected president of the Illinois Feed Assn., succeeding Dan Teefey, Teefey Grain Co., Mt. Sterling, retiring president. Roy Hewitt, Hewitt-Ware Feed & Supply Co., Hillsboro, was chosen vice president.

Ted Myren, Faultless Milling Co., Springfield, was re-elected treasurer and Dean M. Clark, Chicago, was renamed executive secretary.

The Illinois Feed Assn. voted to rejoin the University of Illinois in the sponsorship of an annual feed nutrition conference early in 1961.

New officers of the IPHF are: President, Ben Ward, Jr., Ward's Hatchery, Geneseo, Ill.; first vice president, Emile Garcia, Haag's Hatchery, Breese, Ill.; second vice president, Don Young, DeKalb Hatchery, Illiopolis, Ill.; secretary-treasurer, Aubrey Harless, Shelbyville, Ill. Charles Meler, Nashville (Ill.) Hatchery, was chosen as delegate to the American Poultry & Hatchery Federation.

About 600 were registered for the convention and exhibits at the Springfield Armory.

Summaries of talks at the Illinois meeting will appear in Feedstuffs next week.

The FEED MARKET

PRICE QUOTATIONS, MARKET TRENDS
OF PRINCIPAL INGREDIENTS

NOTE: Quotations on feed ingredients shown in these and adjoining columns are wholesale prices, per ton, bulk, for prompt delivery, unless otherwise noted. They are the latest quotations available from Feedstuffs correspondents and are not necessarily those in effect on date of publication. The prices represent fair average trading values and do not necessarily represent extreme low or high levels at which individual sales might have occurred. A descriptive summary of supply and demand factors prevalent in the feed market appears on page 2.

A AND D FEEDING OIL

Chicago: Demand fair; trend steady; supply ample; straight A feeding oil, with 10,000 units vitamin A per gram, 7@7¼¢ a million units of vitamin A, l.c.l., packed in 55 gal. drums, f.o.b. Chicago, drums included.

Minneapolis: Demand fair; supply ample; 10,000 A 31¢ lb.; 300 D, 2,250 A 17½¢ lb.; 300 D, 1,500 A 16¢ lb.; 300 D, 750 A 15⅝¢ lb.

Boston: Demand slow; supply plentiful; 400 D, 3,000 A 19½¢ lb.; 300 D, 3,000 A 19¢; 300 D, 2,250 A 17½¢; 300 D, 1,500 A 16¢; 300 D, 750 A 14¢; 75 D, 750 A 13½¢.

Denver: Demand fair; trend steady; supply ample; 21¢ lb.

ALFALFA MEAL

Omaha: Demand fair; trend steady; supply ample; 17% dehydrated, 100,000 A units, bulk pellets $46; sacked meal $51, Omaha.

Kansas City: Demand fair; trend firmer; supply ample; 17% dehydrated alfalfa, 100,000 A on arrival, pellets $47@48, reground pellets $48@49; 15% dehydrated alfalfa, 125,000 A on arrival, pellets $48@51, reground pellets $49@52; 20% dehydrated alfalfa, 150,000 A on arrival, pellets $48@52, reground pellets $50@53; suncured alfalfa, demand improved, supply adequate, 13% pellets $35@37; No. 1 ¼-in. $40, sacked.

Boston: Demand good; supply adequate; dehydrated, 17% $59; suncured, 13%, pellets $50.60, sacked.

Memphis: Demand fair; trend steady to higher; supply ample; dehydrated, 17% protein, guaranteed 100,000 units vitamin A $51.

Ft. Worth: Demand of dehydrated good, suncured fair; supply sufficient; sacked; dehydrated, 17%, 100,000 A $57.10, truck or rail; suncured: 13% ¼-in. grind No. 1 $48, truck; 15% fine ground, dry $50, with 2% fat added $52, rail or truck.

St. Louis: Demand slow; trend firm; supply limited; suncured, 13% fine, sacked $48; dehydrated, 17%, 100,000 A pellets, demand slow, trend firm, supply adequate, bulk $49.50.

Los Angeles: Demand moderate; trend steady; supply ample; dehydrated meal, 17% protein, 100,000 A $51@52; dehydrated pellet meal, 17% protein, 100,000 A $53@54; suncured meal, 15% protein $45@46; suncured crumbles, 15% protein $47@48.

Portland: Demand good; trend steady; supply adequate; $46@49.50, sacked.

Philadelphia: Demand slow; trend unsettled; supply fair; 17% dehydrated $57.

Cincinnati: Demand fair; trend higher; supply adequate; 17% dehydrated, 100,000 vitamin A $55@56.

Denver: Demand fair; trend steady; supply ample; dehydrated meal, sacked $51; bulk pellets $47.

Chicago: Demand strong; trend higher; supply light; dehydrated, 17% protein, 100,000 units vitamin A $49@50.

Minneapolis: Strong market; 17% dehydrated, 100,000 A units, reground pellets $51, bulk, delivered Minneapolis; oiled reground pellets $53.

Buffalo: Demand fair to poor; trend steady to higher; supply adequate; $62.50, sacked, Boston.

Seattle: Demand fair; trend steady; supply good; 15% protein suncured $49, 150,000 A unit dehydrated $70, both delivered truck loads, sacked.

ANIMAL FAT (STABILIZED)

Louisville: Demand fair; trend steady; supply good; prices down ½¢ gal. or more; bleachable white 5¾¢ lb., white tallow 6¢ lb., yellow grease 5¼¢ lb., in tanks.

Ft. Worth: Demand good; supply sufficient; prime tallow, tank cars 5¾¢ lb.; drums 7¼¢ lb., f.o.b. north Texas packing plants with returnable drums.

San Francisco: Demand fair; supply ample; bleachable fancy 6¼¢ lb; yellow grease 4¾¢ lb.

Kansas City: Demand fair; trend steady; supply ample; stabilized prime tallow 5¼¢ lb.

Chicago: Demand good; trend steady; supply fair; tank truck or carlots, bleachable fancy tallow $5.75 cwt., yellow grease $5 cwt.

Ogden: Supply good; $5.25 cwt.

Boston: Demand improved; supply ample; tallow 5¾¢ lb.; yellow grease 4¾¢ lb.

Salisbury, Md.: Demand excellent; supply limited; 5½¢ lb., f.o.b.

St. Paul: Demand good; supply ample; price unchanged at 5¾¢ lb., f.o.b. producer's plant.

BARLEY FEED

Chicago: Demand and supply fair; trend firm; $34, sacked.

San Francisco: Demand fair; supply ample; rolled $58, ground $57.

Los Angeles: Demand slow; trend firm; supply adequate; standard rolled $3 cwt., standard ground $3 cwt., both sacked.

Ogden: Supply good; rolled $45@46, whole $40@41.

Baltimore: Demand fair; trend steady; supply ample; $44.50, sacked.

Milwaukee: Demand limited; trend unchanged; supply ample; feed barley 78¢ bu., bulk; barley feed $35, sacked; ground feed barley $41.50, sacked.

Portland: Demand good; trend firm; supply adequate; $44.

Philadelphia: Demand slow; supply fair; $41.50.

Boston: Demand slow; supply ample; $45.50, sacked.

Denver: Demand fair; trend steady; supply tight; rolled $2.05 bulk, $2.25 sacked.

Seattle: Demand and supply good; trend steady; $46, truck lots.

BENTONITE (SODIUM)

Chicago: Demand fair; supply ample; trend steady; f.o.b. Wyoming and South Dakota shipping points: 200 mesh $14 and net $13.75; fine granular (80 to 100 mesh) $14.25 and net $14; granular, 30 mesh $16.50 and net $16.25.

Cincinnati: Demand steady; supply adequate; f.o.b. Cincinnati, minimum 30 ton lots: 80 granular $31.50, less than car lots $40; 200 mesh fine $31, less than car lots $40.

Denver: Demand fair; trend steady; supply ample; $24.50, warehouse.

BLOOD FLOUR

Louisville: Demand fair; trend steady; supply good; $75@80, sacked.

BLOOD MEAL

Louisville: Demand fair; trend steady; supply good; $75@80, sacked.

San Francisco: Demand and supply fair; $4.75 a unit of ammonia, sacked.

Ogden: Supply ample; $80.

Chicago: Demand quiet; trend steady; supply fair; 80% protein $115, sacked.

Los Angeles: Demand good; trend firm; supply very scarce; $5.40 a unit of ammonia, sacked.

Portland: Demand fair; trend lower; supply ample; $95@100, sacked.

Omaha: Demand and supply good; trend strong; 80% $85, sacked, Omaha.

BONE MEAL (STEAMED)

Boston: Demand and supply steady; $100.

Los Angeles: Demand fair; trend steady; supply limited; imported $80.75, 20 ton lots, sacked.

Ft. Worth: Demand fair; supply light; $100, sacked, f.o.b. Ft. Worth, local manufacture.

Portland: Demand fair; trend steady; supply adequate; $95@97.50, sacked.

Chicago: Demand slow; trend firm; supply fair; $95, sacked.

Louisville: Demand dull; trend steady to stronger; supply light; $85@90, sacked.

San Francisco: Demand good; supply ample; $75, sacked.

Cincinnati: Demand fair; trend steady; supply ample; $90, sacked, Cincinnati.

Denver: Demand normal; trend steady; supply ample; $112.50.

Buffalo: Demand fair; trend strong; supply light; $97, sacked.

Seattle: Demand good; trend firm; supply limited; $92, sacked, f.o.b. car Seattle.

BREWERS DRIED GRAINS

Milwaukee: Demand fair; trend steady; supply limited; $46 bulk, $54 sacked.

Ft. Worth: Demand fair; supply sufficient; 26% protein $50.90@51.90, November.

San Francisco: Demand fair; supply ample; $51, sacked.

St. Louis: Demand fair; trend firm; supply tight; $44.

Chicago: Demand good; trend higher; supply fair; 26% protein $44@45.

Philadelphia: Demand slow; supply light; $57.

Boston: Demand active; supply very tight; 26% $56.50.

Los Angeles: Demand fair; trend steady; supply adequate; $50.50.

Cincinnati: Demand poor; trend steady; supply adequate; $52.

Buffalo: Demand fair; trend steady to higher; supply fair to poor; $57.50, Boston.

BREWERS DRIED YEAST

Los Angeles: Demand steady; trend unchanged; supply limited; 10¢ lb., in 5 ton lots; 11¢ lb., in 1 ton lots; 12¢ lb., in less than 1 ton lots; all sacked.

Portland: Demand fair; trend steady; supply ample; $27.50@35, sacked.

San Francisco: Demand fair; supply good; 10¢ lb., sacked.

Louisville: Demand dull; trend steady; supply good; 10@10½¢ lb.

Chicago: Demand fair; trend steady; supply ample; 9½@10¢ lb., carlots, sacked; 9¾@12½¢ lb., l.c.l.

Milwaukee: Demand fair; trend steady; supply ample; 10½@12½¢ lb., ton lots, sacked.

St. Louis: Demand fair; trend firm; supply ample; 9½@10¢ lb., carlots, sacked; 10½¢ lb., ton lots; 11½¢ lb., less than ton lots.

Pittsburgh: Carlots 10¢ lb.; 5 ton lots 11¢ lb.; ton lots 11½¢ lb., all sacked.

New Orleans: Carlots 10¢ lb.; 5 ton lots 11¢ lb.; ton lots 11½¢ lb., all sacked.

New York: Carlots 9¾¢ lb.; 10 ton lots 10¢ lb.; 5 ton lots 10½¢ lb., ton lots 11¢ lb., all sacked, f.o.b. New Jersey.

Omaha: Demand fair; supply plentiful; trend fair; 11¢ lb.

Boston: Demand and supply steady; 11¢ lb.

Cincinnati: Carlots 11¢ lb.; 5 ton lots 11¢ lb.; ton lots 11½¢ lb., all sacked.

Denver: Demand fair; trend steady; supply ample; 9¢ lb.

Buffalo: Demand fair; trend steady; supply ample; $9.05 cwt.

Seattle: Demand slow; trend steady; supply ample; $12 cwt., sacked.

BUTTERMILK (CONDENSED)

Philadelphia: Demand slow; supply fair; $4.25 cwt.

San Francisco: Demand fair; supply good; $5 cwt., drums.

Los Angeles: Demand slow; trend unchanged; supply adequate; 5½¢ lb., in 100 lb. lots; 4½¢ lb., in 500 lb. lots; both in barrels.

Chicago: Demand and supply fair; trend firm; in 500 lb. barrels $3.25@3.50 cwt.

Ogden: Supply ample; $4.40 cwt., drum.

Boston: Demand and supply steady; 4½¢ lb.

CALCITE CRYSTALS AND FLOUR

(All prices net, sacked, including freight)

New York: Crystals $16.28, flour $10.28.

Buffalo: Crystals $17.11, flour $11.11.

Toledo: Crystals $18.96, flour $12.96.

Boston: Crystals $17.63, flour $11.63.

Lime Crest, N.J.: Crystals $11.50, flour $5.50.

CALCIUM CARBONATE

Chicago: Demand fair; trend steady; supply ample; fine grind, plain, 100 lb. bags $9.54; bulk, in hopper cars $7.54; bulk, in boxcars $8.04; granular grind $1 premium.

Minneapolis: Fine grind, 50 lb. bags $12.75; 100 lb. bags $12; bulk, boxcar $10.50; bulk, hopper $10; coarse grind $1 premium, delivered Minneapolis.

Los Angeles: Demand fair; trend steady; supply adequate; flour $10.15, 20 ton cars, meal $11.15, 20 ton cars, both sacked.

Cincinnati: Demand fair; trend steady; supply adequate; $7@7.50 cwt.

Seattle: Demand and trend steady; supply good; $14, ex-warehouse, sacked.

CHARCOAL

Chicago: Demand fair; trend firm; supply fair; 50 lb. multiwalls $110.

San Francisco: Demand steady; supply ample; $141, sacked.

Los Angeles: Demand slow; trend unchanged; supply adequate; hardwood poultry: $156, less than ton lots; $144.40, ton lots; both sacked.

Boston: Demand and supply light; granular No. 6 $110.

COCONUT OIL MEAL

San Francisco: Demand fair; supply ample; solvent $52, expeller $69.

Los Angeles: Demand fair; trend steady; supply ample; copra cake $63, November.

Portland: Demand slow; supply adequate; trend unchanged; $63.

Seattle: Demand fair; trend steady; supply ample; solvent type $63, f.o.b. car Seattle, sacked.

COD LIVER OIL (FORTIFIED)

Boston: Demand slow; supply plentiful; 300 D, 3,000 A 20¢ lb.; 600 D, 2,250 A 18½¢; 300 D, 2,250 A 18¢; 600 D, 1,500 A 17¢; 300 D, 1,500 A 16½¢.

CONDENSED FISH SOLUBLES

Los Angeles: Demand fair; trend steady; supply adequate; 2¢ lb.

Boston: Demand slow; supply plentiful; 2¢ lb.

Denver: Demand light; trend weak; supply ample; 3¢ lb., West Coast.

CORN GLUTEN FEED AND MEAL

(All quotations for all cities are bulk basis, sacked basis $5 more)

Minneapolis: Feed $43.60, meal $64.60.
Atlanta: Feed $47, meal $68.
Birmingham: Feed $45.60, meal $66.60.
Boston: Feed $48.50, meal $69.50.
Chicago: Feed $37, meal $58.
Cleveland: Feed $44.90, meal $65.90.
Denver: Feed $47.20, meal $68.20.
Ft. Worth: Feed $45.70, meal $66.70.
Indianapolis: Feed $42.20, meal $63.20.
Kansas City: Feed $37, meal $58.
Louisville: Feed $44.60, meal $64.60.
New Orleans: Feed $46.90, meal $67.90.
New York: Feed $48.10, meal $69.10.
Norfolk: Feed $47.50, meal $68.50.
Philadelphia: Feed $47.70, meal $68.70.
St. Louis: Feed $37, meal $58.

CORN OIL MEAL

Louisville: No demand; trend strong; supply near zero; $53.55, sacked, up $2.

Cincinnati: Demand fair; trend steady; supply adequate; $45.

Seattle: Demand good; trend easy; supply ample; $51, car or truck.

COTTONSEED OIL MEAL

Philadelphia: Demand slow; supply fair; $68, 30 ton cars.

Omaha: Demand slow; trend steady; supply ample; 41% solvent $59.70, delivered Omaha.

Ft. Worth: Demand fair on meal, good on hulls; supply sufficient; 41% old process $61, f.o.b. mills Ft. Worth; carlots, solvent, 2% fat added, $57, November-December, delivered Ft. Worth; pellets $2 additional; hulls $19.

San Francisco: Demand fair; supply ample; 41% $58.50, 44% $62.

Boston: Demand fair; supply spotty; 41% immediate $74.50, sacked.

Portland: Demand fair; trend firm; supply adequate; $67.

Wichita: Demand fair; supply ample; 41% old process $68, sacked.

Louisville: Demand fair; trend easy; supply normal; old process $63.60, off $1.40; new process $61.10, up 10¢; both sacked.

Los Angeles: Demand slow; trend steady; supply ample; $54.

Ogden: Supply ample; 41% $63@65.

St. Louis: Demand slow; trend steady; supply ample; solvent $55.

Kansas City: Demand fair; trend weaker; supply ample; 41% old process $55@55.50; solvent process $51@51.50, Memphis.

Memphis: Demand fair; trend weak; supply ample; prime 41% protein, old process $53.50; new process, 41% solvent $51.

Cincinnati: Demand poor; trend steady; supply adequate; $58.60, 40 ton lots.

Chicago: Demand fair; trend easier; supply good; Memphis basis, hydraulic $54.50.

Denver: Demand and supply fair; trend steady; $58.50.

Seattle: Demand fair; trend firm; supply ample; $68, f.o.b. car Seattle.

Buffalo: Demand fair to poor; trend steady; supply adequate; $75, sacked, Boston.

CURACAO PHOSPHATE

New York: Minimum 14% phosphorus $46.50 sacked, $43.50 bulk, f.o.b. New Orleans, Jacksonville and Philadelphia.

D ACTIVATED ANIMAL STEROL (POWDERED)

Cincinnati: Demand fair; trend steady; supply ample; 1,500 ICU 11@12¢ lb.; 3,000 ICU 10¢ lb., warehouse.

Kansas City: Demand fair; trend steady; supply ample; 1,500 ICU 9¾¢ lb.; 3,000 ICU 11¢ lb.

D ACTIVATED PLANT STEROL (POWDERED)

Chicago: Demand fair; supply ample; 4,000,000 U.S.P. units per lb., 15¢ lb. in ton lots, less than ton lots 17¢ lb.; 12,000,000 units per lb., 5 tons to a carload 28¢ lb., ton lots and less 30¢ lb.

DEFLUORINATED PHOSPHATE

Coronet, Fla.: Minimum phosphorus 18%, minimum calcium 31%, maximum calcium 34%, maximum fluorine .18%; guaranteed uniform analysis; carload $66.25, sacked; 100 lb. multiwall bags, bulk $63.25; truck load $67, sacked, in 100 lb. multiwall bags, bulk $64, f.o.b. Coronet, Fla.

Tupelo, Miss.: Minimum phosphorus 14%, minimum calcium 28%, maximum fluorine .14% $57.07, f.o.b. Tupelo in 100 lb. multiwall bags, $54.07 bulk.

Wales, Tenn.: Minimum phosphorus 18%, minimum calcium 33%, maximum 36%, maximum fluorine .18% $71.80 (or $3.99 per unit of P), f.o.b. Wales in 100 lb. multiwall bags, $3 less in bulk.

Butte, Mont.: Minimum phosphorus 18%, minimum calcium 33%, maximum calcium 36%, maximum fluorine .18%, $81 (or $4.50 per unit of P), f.o.b. Butte, 100 lb. multiwall bags; bulk $78; truck lots of less than 10 tons $10 more, bagged or bulk.

Houston: Minimum phosphorus 19%, minimum calcium 32%, maximum calcium 35%, maximum fluorine .19% $74.35 net ton, f.o.b. Houston, 100 lb. multiwall bags; $71.35 bulk.

Cincinnati: 18% phosphorus $81.02; 14% phosphorus $71.03, f.o.b. Cincinnati.

Portland: Demand fair; supply ample; trend unchanged; $93.50@95 for product carrying a minimum of 18% phosphorus, 31.5% calcium and a maximum of 0.1% fluorine; $92@93.50 dock for a minimum of 10 ton lots.

DICALCIUM PHOSPHATE

Trenton, Mich.: 18½% P $33, bulk, boxcar/hopper car; $36, bagged, in carloads or truck loads; $36, bagged, in less than carload lots; 21% P, $94.65, bulk, boxcar/hopper car; $97.65, bagged, in carloads or truck loads; $107.65, bagged, less than carload; all prices f.o.b. Trenton, freight equalized with nearest producing point.

Chicago: Bulk 18.5% phosphorus, carlots or trucks $83; 20,000 lb. or more $86 net ton in 100 lb. papers; less than 20,000 lb. $96, basis Chicago Heights, Ill., or Nashville, Tenn.; 21% phosphorus, carlots or trucks, bulk $94.65; 20,000 lb. or more, per net ton in 100 lb. papers, $97.65 and less than 20,000 lb., $107.65, basis Chicago Heights, Ill., or Nashville, Tenn.

Bonnie, Fla.: Minimum phosphorus 18½%, granular, $86 (or $4.65 unit of P), freight equalized from nearest producing point, carload basis; bulk carloads $3 less; in truck loads of less than 10 tons, $10 more. Western slope prices, for delivery at established railroad stations and by truck at regular feed mixing plants: California, Arizona, Nevada and Utah, $99.90; Washington, Oregon, Montana and Idaho, $107.15; bulk carloads $3 less; truck loads less than 10 tons, $10 more.

Columbia, Tenn.: Minimum phosphorus 18.5%, minimum calcium 24% $86, f.o.b. Columbia, in 100 lb. multiwall bags; freight equalized with nearest producing point, carload basis; bulk $3 ton less.

Texas City, Texas: Minimum phosphorus 18.5%, minimum calcium 30%, maximum calcium 23%, maximum fluorine .12%; carload and truck load $80.50, sacked in 100 lb. multiwall bags, bulk $77.50, f.o.b. Texas City.

Cincinnati: 18½% phosphorus $92.15, f.o.b. Cincinnati.

Denver: Demand good; trend steady; supply ample; $93.50, delivered.

DISTILLERS DRIED GRAINS

Philadelphia: Demand slow; trend unsettled; supply light; $66.75.

Boston: Demand active; supply nil; dark $66.50.

Louisville: Demand good; trend steady to strong; supply light; production light; distillers have been overproducing whiskey and will slow down now; bourbon grains: light $57, dark $58, solubles $73, all sacked.

San Francisco: Demand fair; supply ample; solubles $79, sacked.

Cincinnati: Demand poor; trend steady; supply adequate; $60.

Buffalo: Demand good; trend steady to higher; supply poor; $67, Boston.

Seattle: Demand fair; trend firm; none available; $69, delivered truck lots, sacked.

DRIED BEET PULP

Los Angeles: Demand and trend steady; supply adequate; $47.90.

Milwaukee: Demand limited; trend unchanged; supply adequate; old crop, plain $74.50, molasses $71; new crop, plain and molasses $51.

Ft. Worth: Demand slow; offerings light; plain $60@62, sacked, 50 lb. bags, November,

San Francisco: Demand good; supply fair; $42.80.
Ogden: Supply good; $39@45.
Portland: Demand good; trend steady; supply adequate; molasses $48.50, sacked.
Boston: Demand good; supply adequate; domestic $59@59.50 sacked, Canadian $60.25.
Buffalo: Demand fair; trend higher; supply poor; $61, sacked, Boston.
Denver: Demand fair; trend steady; supply ample; $65, f.o.b.
Seattle: Demand good; trend steady; supply ample; $49, delivered carlots, sacked.

DRIED BUTTERMILK

Ogden: Supply good; $17.25 cwt.
Louisville: Demand dull; supply light; 12@12¼¢, sacked.
San Francisco: Demand fair; supply ample; 13½¢ lb., sacked.
Chicago: Demand slightly improved; trend higher; supply fair; medium acid $11.75@12.25 cwt.; sweet cream $11.75@12.25 cwt.; both sacked.
Los Angeles: Demand slow; trend steady; supply adequate; 13½@13¾¢ lb., sacked.
Boston: Demand light; supply short; 14¢ lb., nominal.
Buffalo: Demand fair; trend steady; supply limited; $12.75 cwt.

DRIED CITRUS MEAL

San Francisco: Demand and supply fair; $48, sacked.
Boston: Demand fair; supply tight; $52, f.o.b. Florida.

DRIED SKIM MILK

Boston: Demand good; supply scarce; 12½¢ lb.
Chicago: Demand slow; trend steady to strong; supply fair; $11.75@12.25 cwt., sacked.
San Francisco: Demand and supply fair; 14½¢ lb., sacked.
Louisville: Demand slow; trend steady; supply ample; 12½@13¢ lb., sacked.
Ogden: Supply good; $15.15 cwt., drum.
Los Angeles: Demand slow; trend unchanged; supply adequate; 15¢ lb., less than ton lots; 14¾¢ lb., ton lots; both sacked.
Philadelphia: Demand slow; supply fair; $13 cwt.
Omaha: Demand good; trend strong; supply short; 12¢ lb.
Cincinnati: Demand fair; trend steady; supply adequate; 12@13¢ lb., sacked.
Buffalo: Demand fair; trend steady; supply limited; $13.35 cwt.
Minneapolis: Demand good; supply short; price unchanged at 12¼@12½¢ lb.

DRIED WHEY

Philadelphia: Demand slow; supply fair; $6.25 cwt.
Portland: Demand fair; trend lower; supply ample; $5.60 cwt., sacked.
Boston: Demand and supply good; 5¼¢ lb.
Chicago: Demand quiet; trend steady; supply fair; $4.95 cwt., sacked.
Ft. Worth: Demand fair; supply adequate; carlots, standard $5.50, sacked, delivered Ft. Worth; ton lots $5.75, f.o.b. warehouse, Ft. Worth.
Louisville: Demand dull; trend easy; supply light; $5.50@6 cwt., sacked.
San Francisco: Demand steady; supply good; $5.25 cwt., sacked.
Ogden: Supply ample; $6.90 cwt., sacked.
Los Angeles: Demand fair; trend steady; supply adequate; $5.18 cwt., carloads; $5.35 cwt., l.c.l.; both sacked.
Omaha: Demand and supply good; trend strong; $5.50 cwt.
Cincinnati: Demand fair; trend steady; supply adequate; $5.75 cwt., sacked.
Denver: Demand slow; trend steady; supply ample; $5.35, delivered truck.
Seattle: Demand steady; trend easy; supply good; $5.85 cwt., ex-warehouse, l.c.l.
Kansas City: Demand fair; trend steady; supply adequate; regular or partially delactosed $5.25 cwt., sacked.
Minneapolis: Demand slow; supply adequate for nearby; price unchanged at $5.45 cwt.

FEATHER MEAL (HYDROLYZED)

Ft. Worth: Demand good; supply sufficient; 85%-87% protein $65@67.50, sacked, f.o.b. trucks north Texas plants.
Los Angeles: Demand fair; trend steady; supply ample; 90¢ a unit of protein, sacked.
Boston: Demand quiet; supply improved; $65, f.o.b. shipping point.
Ft. Worth: Demand good; supply extremely light; 85%-87% protein $65, sacked, f.o.b. trucks north Texas plants.
Salisbury, Md.: Demand good; supply ample; $72, f.o.b.

FISH MEAL

Boston: Demand fair; supply plentiful; 60% $90, sacked; 57%, quotation withdrawn.
Omaha: Demand fair; trend good; supply plentiful; 60% menhaden $110, f.o.b. Omaha.
San Francisco: Demand slow; supply ample; $1.40 a unit of protein.
Chicago: Demand good; supply ample; trend steady; sacked: menhaden, East Coast $90, Gulf $90; menhaden scrap, East Coast $86, Gulf $86; Canadian herring meal $1.55 a unit of protein.
Ft. Worth: Demand fair; supply sufficient; sacked: 65% protein Peruvian $94.50, November; 60% protein menhaden $100, delivered Ft. Worth.
Ogden: Supply good; $1.05 a unit, f.o.b. Coast; 65% $105@108.
Louisville: Demand dull; trend easy; supply light; $105@110, sacked.
Los Angeles: Demand and supply moderate; trend unchanged; local production, 60% protein $1.55 a unit, sacked.
Milwaukee: Demand fair; trend firm; supply good; $115, sacked, Chicago.
Portland: Demand slow; supply ample; trend unchanged; $1.55 a protein unit, sacked.
Cincinnati: Demand fair; trend steady; supply adequate; $108.60.
Denver: Demand good; trend steady; supply nil; no fish meal available; now using imported Peruvian anchovie meal at $115.
Buffalo: Demand fair; trend steady; supply ample; 60% protein menhaden $103 bulk, $108 sacked.
Seattle: Demand good; trend firm; supply fair; $1.70 a unit protein, ex-dock Seattle, sacked (Alaskan production).
Minneapolis: Demand poor; supply ample; price unchanged; West Coast 60% blended $118, sacked delivered; Alaskan herring $1.55 a unit and Canadian $1.55 a unit, both West Coast, subject to production.

HAY

Los Angeles: Demand slow; trend unchanged; supply adequate; U.S. No. 1 $33@35; U.S. No. 2 leafy $29.50@31; U.S. No. 2 green $31@32; U.S. No. 2 $27@28.
Portland: Demand improving; supply adequate; trend steady to firm; $34@36 ton, baled, Portland-Seattle.
Philadelphia: Demand slow; supply light; $25.50.
Louisville: Demand slow; trend steady; supply good; new hay taking over; local and nearby hay, any variety, No. 1 $28@30, No. 2 $26@28, straw $18@20.
Wichita: Demand good; supply sufficient; prairie $22@25, alfalfa $24@28, baled.
Ft. Worth: Demand fair for alfalfa, practically nil for others; supply sufficient; carlots, baled, No. 1 alfalfa $40@42; No. 2 $38@40; No. 2 prairie, nominal $30@32; No. 2 Johnson, nominal $28@30, delivered Texas common points.
Boston: Demand fair; supply ample; No. 2 timothy $40.
Ogden: Supply good; $25 ton in the barn.
Cincinnati: Demand good; trend steady; supply tight; No. 1 timothy $30; No. 2 timothy $27; No. 1 red clover $32; clover mixed with straw $25.
Seattle: Demand and supply fair; trend firm; alfalfa, U.S. No. 2 green $35, delivered truck lots, baled.

HOMINY FEED

St. Louis: Demand slow; trend steady; supply adequate; yellow $39.50.
Memphis: Demand poor; trend weak; supply ample; white $40.70.
Louisville: Demand dull; trend steady; supply normal but light; $46, sacked.
Milwaukee: Demand and supply fair; trend lower; $44.50 sacked, $40 bulk, both Chicago basis.
Kansas City: Demand fair; trend steady to stronger; supply adequate; solvent process $52.50@53; old process $56@56.50, Minneapolis.
Los Angeles: Demand fair; trend steady; supply limited; local production, 31% protein $71.
Wichita: Demand fair; supply ample; 34% $78, sacked.
Boston: Demand slow; supply light; $68.70.
Portland: Demand slow; supply ample; trend unchanged; $84@85, sacked.
Philadelphia: Demand slow; supply light; 34% $70.
Milwaukee: Demand limited; supply fair; trend strong; expeller $68@68.50, solvent $62.50, both Chicago basis.
Omaha: Demand good; trend strong; supply tight; 34% solvent $58.30; 32% old process $63.30, Omaha basis.
Cincinnati: Demand poor; trend steady; supply adequate; new process $52, old process $57.50, Minneapolis.
Minneapolis: Solvent holding at $52.50; 32% expeller up 50¢ to $57.
Chicago: Demand improved; trend higher; supply light; Minneapolis basis: solvent $52.50, expeller $57.50.
Denver: Demand slow; trend steady; supply ample; $69.30, sacked.
Seattle: Trend steady; supply good; 34% protein (Montana) $55, delivered carloads, sacked.

LIVER AND GLANDULAR MEAL

Omaha: Demand and trend fair; supply plentiful; 65% $175, sacked, Omaha.

MALT SPROUTS

Milwaukee: Demand good; trend strong; supply limited; $38 bulk; uneven sacks $41; even sacks $44.50.
Boston: Demand and supply limited; $48, sacked.
Cincinnati: Demand fair; trend steady; supply adequate; No. 1 $38.
Chicago: Demand moderate; trend steady; supply light; No. 1 uneven sacks $40.50.

MEAT AND BONE MEAL

Kansas City: Demand fair; trend steady; supply ample; 50% $65.
Chicago: Demand quiet; trend firm; supply adequate; 50% protein $75, sacked.
Ft. Worth: Demand good; supply sufficient; meat and bone, 50% $63.50@65 bulk, $65.50@67.50 sacked, f.o.b. Ft. Worth.
Los Angeles: Demand fair; trend unchanged; supply ample; 50% protein $1.40 a unit.
Portland: Demand good; trend higher; supply adequate; $70, sacked.
Louisville: Demand dull; trend steady; supply good; $70@75, sacked.
San Francisco: Demand fair; supply ample; $1.40 a unit of protein.
Ogden: Supply good; 50% protein $72.50 sacked.
Wichita: Demand heavy; supply sufficient; 50% $80, sacked, f.o.b. plant.
Boston: Demand slow; supply adequate; $1 a protein unit; converted, 50% $62.50.
Omaha: Demand good; trend fair; supply plentiful; $75.
St. Louis: Demand fair; trend steady; supply ample; $65.
Cincinnati: Demand good; trend steady; supply fair; 50% meat and bone scraps $67.50, Cincinnati.
Denver: Demand fair; trend steady; supply ample; $60 bulk, sacked $62.50.
St. Paul: Demand fair; supplies ample; price unchanged at $68@74.
Buffalo: Demand fair; trend advancing; supply light; 50% meat scraps $70 bulk, $75 sacked.
Seattle: Demand good; trend firm; supply ample; $1.45 a unit protein, ex-processing plant, sacked.

MILLFEED

Minneapolis: Prices down somewhat; bran $37@37.50, middlings $36, red dog $39@40.
Kansas City: Demand slow; trend easy; supply ample; sacked, bran $36.50@37, shorts $36@36.50; bulk, bran $33.50@33, shorts $32.50@33, middlings $32.50@33.
Chicago: Demand slow; trend irregular; supply ample; standard bran $34, standard midds. $36@36.50; red dog $43.
Ft. Worth: Demand fair; offerings: bran light for immediate shipment, sufficient on shorts and middlings; bran, bulk $40.50, burlaps $45; gray shorts, bulk $42, burlaps $44.50; bulk middlings $42, delivered Texas common points; bulk bran $1.50@2 lower, bulk shorts and middlings $1 lower, sacked bran unchanged, sacked shorts 50¢ lower, compared with previous week.
Wichita: Demand active; supply short to adequate; Oct. 31, basis Kansas City: bran $37.25@37.75, shorts $37.25@37.75, sacked; both bran and shorts advanced $1 compared with the preceding week.
St. Louis: Demand fair; trend easy; supply ample; sacked, bran $42, shorts $41; bulk, bran $38, middlings $38.
Louisville: Demand slow; trend strong; supply normal, but not selling; bran $48.50, mixed feed $49.30, shorts $50.30, all sacked.
Memphis: Demand fair; trend steady; supply ample; wheat bran $40.30, gray shorts $40.30, standard midds. $39.80.
Omaha: Demand fair; trend steady; supply tight; sacked bran $38.50, sacked gray shorts $38.50, bulk standard midds. $35.50, all Omaha basis.
Cincinnati: Demand poor; trend steady to higher; supply adequate; bran $42, middlings $43.
Buffalo: Bulk bran $35.50@36, sacked $40@41; bulk middlings $38.50@39, sacked $43@44; bulk red dog $43@44.50, sacked $45@48.50.
Boston: Demand spotty; supply irregular; bran $46, middlings $48.
Philadelphia: Demand and supply fair; trend unsettled; bran $45, standard midds. $45, red dog $48.50.
Ogden: Supply normal; to Utah and Idaho: red bran and millrun $37, middlings $42; to Denver: red bran and millrun $44, middlings $49; to California: red bran and millrun $44.50, middlings $49.50, f.o.b. San Francisco and Los Angeles.
Denver: Demand good; trend steady; supply ample; shorts $39.75, bran $40.25, millrun $40.
Seattle: Demand fair; trend firm; supply ample; $40, delivered common transit points, carlots.
Portland: Demand fair; trend steady; supply adequate; $38@39.
San Francisco: Demand good; supply fair; millfeed $45.75, red bran $48.50.
Los Angeles: Demand fair; trend firmer; supply light; standard millrun $46.50@47, red bran $50@51.

MINERAL FEED

San Francisco: Demand steady; supply good; all-purpose with iodine $70, sacked.
Ogden: Supply good; $113 ton in 50 lb. blocks; $103 ton, granular, 50 lb. bags.
Portland: Demand good; supply adequate; trend unchanged; $44@45, sacked.
Sioux City: 60 lb. mineral blocks 8.2% phosphorus $92; 7.5% phenothiazine sheep mineral blocks $4 each.
Ft. Worth: Demand fair; supply adequate; all-purpose granules $90, block $70; mineral phosphorus 5% granules $106, block $113; cattle-sheep mineral 7% phosphorus granules $100, block $107; hog mineral phosphorus 3½% granules $87, phosphorus 2% $77 (all in 50 lb. paper bags).
Wichita: Demand heavy; supply sufficient; all-purpose with iodine, 50 lb. blocks $97.50, 100 lb. bags $92.50, f.o.b. plant.
Seattle: Demand fair; trend steady; supply good; mixer mineral $48, all-purpose mineral $35, both ex-warehouse, sacked.

MOLASSES

Kansas City: Demand fair; trend firm; supply ample; blackstrap 12¼¢ gal., f.o.b. New Orleans.
San Francisco: Demand and supply good; $23.75, f.o.b. cars Richmond, Cal.
Memphis: Demand fair; trend steady to higher; supply ample; blackstrap 12½¢ gal., tank car, f.o.b. New Orleans, and $28.50 ton, delivered Memphis, truck.
Boston: Demand fair; supply ample; 14¢ gal., in tank cars.
Los Angeles: Demand very good; trend unchanged; supply adequate; $22.50, f.o.b. tank cars; $25.75, f.o.b. tank trucks.
Milwaukee: Demand fair; trend firm; supply ample; 12½¢ gal., f.o.b. New Orleans.
Ft. Worth: Demand good; supply sufficient; blackstrap 13¢ gal., f.o.b. Houston; delivered Ft. Worth, truck $28.93, seller's market price on date of shipment.
St. Louis: Demand slow; trend firm; supply adequate; 12½¢ gal., tank car, New Orleans.
Louisville: Demand fair; trend slightly stronger; supply normal; 12½¢ gal. in tank car lots, f.o.b. Gulf ports, up ½¢ gal.
Cincinnati: Demand fair; trend steady; supply adequate; 12¢ gal., New Orleans.
Buffalo: Demand fair; trend steady; supply adequate; 14¢ gal., f.o.b. Albany.
Seattle: Demand and supply good; trend firm; $22.75, f.o.b. Seattle, tank truck lots.
Denver: Demand fair; trend firm; supply ample; 11¾¢ gal., New Orleans; $35.09, Denver.
Minneapolis: Prices unchanged; blackstrap $31, tank truck, delivered; beet $28, blend $29.50.

OAT PRODUCTS

Seattle: Demand good; trend firm; supply fair; $57, delivered truck lots, 38 lb. or better.
Philadelphia: Pulverized white, demand slow, supply fair $47.50; domestic, demand slow, supply light $26.50; Canadian oat feed, demand fair, supply very light $30, sacked, nominal.
Boston: Demand light; supply fair; white pulverized $54.50, sacked; reground oat feed $26, sacked.
Portland: Demand fair; trend steady; supply tight; No. 2 extra heavy white $56.
Memphis: Demand fair; trend steady; supply ample; 3½% protein reground oat feed $28.25.
Ft. Worth: Demand slow; supply sufficient; 10% protein oat millfeed $42.80, reground $26.30, sacked.
Louisville: Demand slow; trend higher; supply light; reground $27.40, up 50¢; rolled oats $51, up $1.10; feeding oatmeal $76, up $1; pulverized oats $49.90, steady; crimped oats $63.40, up 50¢; all sacked.
Minneapolis: Rolled $72@73; feeding oatmeal $62@65; pulverized $40@40.20; crimped $58; reground oat feed $18@22; all sacked.
Los Angeles: Demand slow; trend unchanged; supply adequate; local production, pulverized $67, sacked.
Cincinnati: Demand poor; trend steady; supply adequate; pulverized white oats $46@53.
Chicago: Demand fair; trend firm; supply ample; reground oat feed $17; No. 1 fine ground feeding oatmeal $71; feeding rolled oats $75.

OYSTER SHELL

Seattle: Demand and trend steady; supply good; eastern $30, delivered carlots, sacked.
San Francisco: Demand fair; supply ample; local $15, eastern $26, sacked.
Boston: Demand and supply steady; in paper $26.52.
Louisville: Demand fair; trend steady; supply normal; in 80 lb. bags $23.95; in 50-lb. bags $24.20; in 25 lb. bags $26.45.
Los Angeles: Demand fair; trend steady; supply adequate; $15.40, sacked.
Portland: Demand fair; trend steady; supply ample; $27.50@35, sacked.
Cincinnati: Demand fair; trend steady; supply adequate; 80 lb. bags $23.85; 50 lb. bags $24.10; 25 lb. bags $26.35.

PEANUT OIL MEAL

Milwaukee: Demand and supply fair; trend unchanged; 26% $44 sacked, $40 bulk, both Chicago basis.

PEAT MOSS

Seattle: Demand fair; trend easy; supply good; $2.60 bale, delivered truck lots.
Philadelphia: Demand slow; supply fair; $2.95 a bale, f.o.b. plee.
Portland: Demand slow; supply ample; trend unchanged; $3@3.15 per 5.6 cu. ft. bale.
Los Angeles: Demand fair; trend steady; supply adequate; Canadian 5.6 cu. ft. bales $3.65.
Boston: Demand and supply steady; $3.15 bale in carlots.
Chicago: Demand and supply fair; trend firm; standard 7½ cu. ft. bale $3.80.
San Francisco: Demand and supply fair; $3.65 a bale.
Cincinnati: Demand and supply good; truck loads $3.45 a bale, f.o.b. Cincinnati.

POTASSIUM IODIDE (U.S.P.)

Chittenango, N.Y.: Demand good; trend firm; supply ample; standard blends, 90% KI, 10% stearate or carbonate mixture: 100 lb. drums $1.25½ lb.; 200 lb. and up $1.23½ lb., all delivered.
Cincinnati: Demand good; trend steady; 90% KI in calcium stearate or carbonate mixtures: 250 lb. drums $1.35; 200 lb. in 100 lb. drums $1.35; 100 lb. drums $1.38; 25 lb. drums $1.41, f.o.b. Cincinnati.

POULTRY BY-PRODUCTS

Ft. Worth: Demand very good; supply extremely light; 55% protein $75@77.50, nominal, sacked, f.o.b. north Texas plants.
Los Angeles: Demand fair; trend steady; supply ample; $1.20 a unit of protein, sacked.
Boston: Demand fair; supply tight; $70.
Salisbury, Md.: Demand good; supply ample; $72, f.o.b.
Ft. Worth: Demand good; supply extremely light; 55% protein $75, nominal, sacked, f.o.b. north Texas plants.

RIBOFLAVIN

Cincinnati: Trend steady; feed grade (in feed supplements) 4¢ gm. in less than ton lots in 3.36 to 16 gm./lb. mixtures; 3¢ in ton lots or more; freight prepaid or paid to destination.

RICE BY-PRODUCTS

Ft. Worth: Demand good; supply moderate; rice bran $33@34, f.o.b. south Texas

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rice mills, sacked; hulls $4.50, sacked, f.o.b. November delivery.

San Francisco: Demand good; supply ample; bran $40, sacked.

Los Angeles: Demand slow; trend unchanged; supply very limited; California production, high fat content, bran $49@50, sacked.

SCREENINGS

Buffalo: Demand and supply fair; trend steady; ground, sacked $35.75, New York, lake and rail; unground, bulk $30, New York.

Minneapolis: Canadian supplies still very tight; price unchanged at $22; improved receipts and good demand on domestics, with trading in middle of ranges; lights $8@12, mediums $13@20, heavies $21@30; 15% flax screenings $35.

Chicago: Demand and trend steady; supply ample; ground grain $32.40; Canadian $26.

Cincinnati: Demand fair; trend steady; supply adequate; unground grain screenings $22.50@23.50.

SOFT PHOSPHATE WITH COLLOIDAL CLAY

(Sacked)

Atlanta: $20.40@20.67.
Buffalo: $25.31@25.45.
Chicago: $24.77@24.90.
Cincinnati: $23.47@23.60.
Des Moines: $25.23@25.35.
Kansas City: $24.88@25.
Memphis: $22.20@22.47.
Minneapolis: $25.93@26.06.
Philadelphia: $24.32@24.95.
St. Louis: $24.14@24.27.

SORGHUMS

Seattle: Demand and supply good; trend easy; milo $44, delivered carlots.

Ft. Worth: Demand fair; offerings increasing; No. 2 yellow milo $1.88@1.90 cwt., delivered Texas common points.

Ogden: Supply good; $40@41.

Los Angeles: Demand and trend steady; supply adequate; milo $2.07½ cwt.

SOYBEAN OIL MEAL

Minneapolis: 44% down 50¢ to $40.50; 50% solvent down $1 to $45.50.

Seattle: Demand good; trend easy; supply ample; $48.40, delivered carlots.

Ogden: Supply good; 41% protein $67@68; 50% protein $72@73.

Boston: Demand fair; supply plentiful; 44% $44; 50% $48.50, f.o.b. Decatur.

Wichita: Demand good; supply about offsets demand; 44% $61, 50% $67, sacked; 44% $58, 50% $64, bulk, f.o.b. plant.

Ft. Worth: Demand fair; supply sufficient; 44% $58.30@57.30, November-December; 50% $62.20@63.50, November-December.

San Francisco: Demand fair; supply ample; $68.90.

Los Angeles: Demand slow; trend weaker; supply ample; $67.90.

St. Louis: Demand slow; trend easy; supply ample; 44% $49.

Milwaukee: Demand and supply fair; trend lower; $46.50@47, f.o.b. Decatur (depending on territory).

Portland: Demand slack; trend lower; supply plentiful; $67.60.

Louisville: Demand fair; trend easy; supply normal; $57.50, sacked, off $2.30.

Memphis: Demand poor; trend weak; supply ample; prime 44% solvent $48.50, f.o.b. Memphis.

Kansas City: Demand slow; trend easier; supply ample; 44% solvent process $44@44.50, Decatur.

Philadelphia: Demand and supply fair; 44% $45.50, Decatur.

Omaha: Demand fair; trend steady; supply ample; 44% $50, delivered Omaha.

Cincinnati: Demand fair; trend lower; supply adequate; $46.50, Decatur.

Denver: Demand fair; trend firm; supply ample; 44% $59, Denver.

Chicago: Demand poor; trend weak; supply ample; Decatur basis, 44% protein, unrestricted billing $45.50 and ETL $43.50; 50% protein, unrestricted $50 and ETL $48.

TANKAGE

Louisville: Demand fair; trend steady; supply good; 60% $70@75, sacked.

St. Louis: Demand slow; trend steady; supply ample; $66.

Kansas City: Demand fair; trend steady; supply ample; 60% digester $67.50.

Chicago: Demand fair; trend firm; supply adequate; 60% protein $75, sacked.

St. Paul: Demand fair; supply ample; price about $2 weaker at $68@72.

Ft. Worth: Demand good; supply inadequate; 60% digester $67.50, sacked, Ft. Worth.

Wichita: Demand heavy; supply sufficient; 60% $80, sacked, f.o.b. plant.

Omaha: Demand good; trend fair; supply plentiful; $75.

Cincinnati: Demand fair; trend steady; supply good; 60% digester $70, Cincinnati.

UREA FEED COMPOUND

Woodstock, Tenn.: Minimum 42% nitrogen, 262% protein equivalent; $100, bagged, f.o.b., freight equalized with nearest producing plant; bulk $96.

Lima, Ohio: Minimum 42% nitrogen, 262% protein equivalent $100, f.o.b. bagged.

Pryor, Okla.: Minimum 42% nitrogen, 262% protein equivalent; $100, f.o.b. bagged; $96, bulk, cars or trucks, freight equalized with nearest producing point.

New York: Minimum 42% nitrone, 262% protein equivalent, $100, f.o.b. bagged; $96, bulk, cars or trucks, freight equalized with nearest producing point.

Belle, W. Va.: Minimum 42% nitrogen, 262% protein equivalent; $100, f.o.b. bagged; $96, bulk, cars or trucks, freight equalized with nearest producing point.

VEGETABLE AND ANIMAL FAT (HYDROLYZED)

Ft. Worth: Demand good; supply limited; 4½¢ lb., f.o.b. south Texas area.

VITAMIN E FEED SUPPLEMENT

Cincinnati: Demand good; trend steady; 50 lb. or more $1.40, less than 50 lb. $1.45, freight allowed to destination.

WHEAT GERM MEAL

Minneapolis: Another price decline to $63@65, jutes.

Buffalo: Demand fair; trend lower; supply fair to good; commercial grade $72, sacked, f.o.b. Buffalo.

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INSPECTIONS

(Continued from page 1)

the entire nine-month period averaged 57%. The percentage agreement ranged from 32% in the earlier months to 75% recently.

A report on this and other aspects of Auburn research on poultry condemnations was made at the recent Alabama Nutrition Conference by Dr. S. A. Edgar and Robert Brewer of the Auburn poultry department. The report was presented to the feed men on hand for the two-day event by Mr. Brewer.

The check on uniformity of inspection is part of a broader Alabama study of the condemnation problem.

The report made at the conference was preliminary and covered the first nine months of 1960, Mr. Brewer explained.

Condemned birds from a total of 202 flocks were picked up at random in the plants and returned to the college for study. Disposition of the birds, it was noted, was made according to U.S. Department of Agriculture regulations.

With a total of 2,473 birds checked, it was found that 1,404 should have been condemned, according to the present regulations, and the remainder could have been passed as they were or cleaned and passed. Mr. Brewer said that 233 could have been passed as they were and 835 could have been cleaned and passed.

He pointed out that pathologists from Washington and elsewhere agreed pretty well with the Auburn scientists' disposition of the birds studied.

He also noted that not all plants have as much disagreement as is indicated in the above figures.

As mentioned above, agreement in more recent months has been greater than initially.

Other Objectives

In addition to testing uniformity of inspection, the Auburn project has these objectives: (a) To better define wholesomeness; (b) to determine farm management practices responsible for high condemnation; (c) to determine plant management practices responsible for plant error condemnation.

Summarizing these other aspects of the research, the report by Dr. Edgar and Mr. Brewer said:

—Plant error condemnation is slightly higher in some cases than it should be. This problem will be helped with better training of personnel and more careful handling of birds.

—Much work is yet to do done to clearly define wholesomeness. The research now in progress will help to answer many questions.

—The field flock study in progress at Auburn, as well as research in other states, indicates that the key to control of much of the losses from condemnation lies in better disease prevention and control measures on the farm. This will be the responsibility of all segments of the industry.

Mr. Brewer pointed out that the plant study is still in progress but that several factors responsible for condemnation are evident.

One of the most evident causes of bruising is rough handling of birds during catching and hauling. Most of the plant error condemnation is due to misbleeds, overscalds or contamination.

The field flock study involves filling out complete production records on many flocks. This research is in progress now. Information available at this time indicates that such management practices as failure to use heat on baby chicks, buying chicks from diseased breeder hens, poor ventilation, general house construction, vaccination programs and several others are partially responsible for high condemnation.

Mr. Brewer pointed out that workers in several other states are working on certain phases of these problems. The Georgia workers, he noted, have pointed to some of the practices listed above as causes for high condemnation.

As part of the nutrition conference report, Dr. Edgar and Mr. Brewer called attention to the sharp increase in condemnations in the winter of 1959-60. For the first 11 months of 1959, losses averaged 1.62% of all poultry processed in inspected plants. Of the total loss of $10 million, some $5 million was in the Southeast.

Then during the first three months of 1960, condemnation in the Southeast averaged 3.7%, or about double that of the year before.

Roughly, about 85% of the condemnations are for disease reasons and 10-15% for plant error or bruises.

Explaining how condemnation affects the dealer or grower, Mr. Brewer said that for every 5% increase in condemnation, the cost of producing a pound of meat goes up about 1¢.

Because of this problem, Auburn University last February was asked to study the condemnation problem, and the work outlined above is now being conducted.

PRICES

(Continued from page 1)

Similar slight weakness in other feed grains is likely, he predicted.

He pointed out that the farm price for corn in 1959-60, supported at $1.12 bu., did not get up to the support level in any of the 12 months. At Chicago, No. 3 corn averaged $1.16, 5¢ bu. lower than the year before.

Dr. Cunningham forecast that soybean meal prices would average around $50-55 ton in 1960-61, with seasonal price movement about the reverse of that experienced in the past year. The range of soybean meal prices during the past feed year went from $63 a ton in mid-January to $47 in late August and averaged $55.49, bulk Decatur.

Dr. Cunningham said that prices of eggs, pork and milk will be slightly higher in 1960-61, while beef, broiler and turkey prices are likely to be lower.

He pointed out that the 1960 crop price support levels are unchanged for soybeans, sorghum grain, oats and barley, but 6¢ bu. lower for corn.

He told the group livestock feeding operations will probably continue to expand, reaching the highest levels in history by the end of the current feed year.

Higher egg prices will mean more chickens will be raised in 1961, he said, noting also a continued expansion of broilers and turkeys in prospect.

Dr. Cunningham said next spring's pig crop is expected to be up about 10%. A slight upturn in numbers of milk cows is also anticipated.

He said that beef cattle numbers will continue to increase.

Dr. Cunningham stated that grain supplies will continue to pile up despite expanding livestock operations and relatively large exports. He maintained this will be especially true of corn and sorghum grain. He referred to the conclusions of the College Feed Survey Committee report (see story on page 1) which indicates that the larger livestock feed needs are in close balance with available supplies of oilseed meals and other high protein feeds, but are well below the supplies of feed grains on hand.

'FINES'

(Continued from page 1)

lets or if various levels of fines could be tolerated.

Results of the study suggest that a certain amount of fines tends to increase rather than decrease feed consumption. Therefore, under commercial conditions some fines would be beneficial, the results indicate.

The ideal ratio of fines to pellets was not completely pinpointed in the study, but it lies between 25 and 60% fines in the diet.

"While the study did not involve enough birds to make industry-wide recommendations, the results strongly indicate that a ration containing a mixture of fines and pellets is superior," Mr. Bragg added.

Protein and Energy

Dr. E. L. Stephenson, poultry nutritionist, gave results of tests involving nutrition of egg-type and meat-type hens. Variables studied were levels of protein, energy and methionine.

With the meat-type birds, protein levels studied were 13 and 19.5%; methionine levels were none and .075%; and energy levels (obtained by adding fat) were none and 5%.

No significant differences in egg production were noted from any of those dietary treatments, Dr. Stephenson said. However, feed conversion was significantly improved when fat was added, with greatest improvement among birds receiving the higher protein level.

In the experiment with egg-type hens, pullets were maintained in individual wire cages. Records were kept of consumption, body weight, egg weight, egg production and mortality. Used in this experiment were protein levels of 13, 16 25 and 19.5%; added fat levels of 0, 5 and 10%; and methionine levels of 0, .075 and .15%.

Results showed no statistical differences in egg production. The addition of methionine tended to improve feed conversion of hens fed the lower protein level but not of those fed the higher protein levels. The low protein diets were significantly more efficient than the high protein diets. Also, the higher levels of fat tended to improve efficiency of feed utilization, Dr. Stephenson asserted.

Dr. E. M. Cralley, director, was first speaker for the event held in the Animal Science Building on the university campus. Dr. Warren Gifford, head of the department of animal industry and veterinary science, presided in the morning. Ruben Jonhson, extension poultry specialist, presided during the afternoon.

Selection Plateau

Dr. J. H. Kan, assistant poultryman, explained that among experimental organisms such as Drosophila (flies) researchers have found that continued selection for a single trait will reach a plateau, where no further genetic improvement is realized.

In view of the recent advances toward breeding for a specialized meat-type bird, the poultry breeder may be facing a similar problem, he indicated. Long-term selection experiments of single broiler traits are being conducted at the Arkansas Station. In event a plateau is reached the mechanisms causing such a plateau will be investigated, he said. During the course of the selection experiments, correlated response of other traits is also being observed.

Dr. G. C. Harris, poultry physiologist, explained that Arkansas researchers are attempting to improve fertility of stored semen, to store semen for longer periods and to obtain more basic information for making artificial insemination more practical.

Dr. J. L. Lancaster, Jr., entomologist, found that Dimethoate, a new material for controlling flies in poultry houses, was effective for at least thee weeks when applied to the droppings. Dimethoate is expected to be released for general use by next spring.

T. D. Hobbs, research assistant, reported that judicious use of the anticoagulant rodenticide—Pival—in poultry houses is safe. Only when Pival was the sole food offered was its effect deadly to chickens, he concluded from Arkansas experiments testing the effects of feeding the rat poison to growing chicks.

B. N. McPherson, research assistant, said that feeding grit to poultry was neither harmful nor beneficial in Arkansas tests. L. D. Andrews, assistant poultryman, discussed the work of the Arkansas random sample poultry testing station. Dr. N. R. Gyles, associate poultryman, covered Arkansas' participation in the southern regional poultry breeding project.

In New Building

ANKENY, IOWA—Neese & Sons, Inc., moved into a new clay tile building here. Elven Neese, president of the firm, says the move will allow for expansion of the firm's vitamin and premix business to dealers throughout Iowa. The firm had been located in Des Moines.

CORNELL

(Continued from page 1)

ciated with it provide our basic national strength, and continued cooperation among all concerned with the vitality of agriculture is essential to retaining that strength, he said.

Papers presented at the conference (summarized on pages 7, 18, 19, 21 and 96) revealed a number of findings of importance to advancing both basic knowledge of animal and poultry nutrition and some discoveries regarded as close to practical application in feeding methods.

Among those of most interest to a number of feed industry nutritionists present at the conference were reports on feeding trials with soybean products for lactating cows, studies of trypsin in chick nutrition, amino acid requirements of swine at various stages of growth and feeding trials showing good growth results obtained in lambs by more frequent feeding intervals.

Why Research?

Dr. Cravens offered these answers to the question, "Why Research?", the topic of his address:

● Because it satisfied man's desire to understand and control his environment. It results from man's desire to be free of fear, free of hunger and free of the perils of nature.

● Because it satisfied our needs. Fortunately there are many who are not content with things as they exist today and thus are constantly seeking new and better things to the benefit of all of us.

● Because it is our responsibility. Whether we be in academic or industrial research, we are charged with uncovering new information that may be of benefit to all of us. We are also charged with the responsibility of disseminating the new information to the public at large . . . We should encourage those who would popularize articles or data to be sure that they are on safe ground prior to releasing such articles for publication in the popular press.

Dr. Cravens cited the number of spectacular improvements in livestock and poultry production which have resulted from nutritional research.

"There is still more to this story," he said. "During the 1935-39 period, 23% of the U.S. consumer income was spent for more and better food. In 1958, only 21% of the U.S. consumer income was spent for more and better food."

He cited these comparisons of the quantities of food which can be purchased today for one hour of factory labor, compared with the 1935-39 period: 3 lb. of chuck roast vs. 2½ lb.; 3 doz. eggs vs. 2 doz.; 8 qt. milk vs. 5 qt.

"Research is the key in all phases of agriculture in meeting the demands of our growing population," he said.

Changing Role

Dr. Palm, in describing the importance of research—the cornerstone of knowledge—in serving today's larger and more efficient farms, also commented on the changing role of extension work.

"The county agent is on the firing line," he said. "He is facing growing competition from industry representatives, and it is becoming more difficult in many cases for him to serve the needs of large, commercial farming operations."

Dr. Palm said that a plan for employing more highly trained extension personnel with regional responsibilities is being considered in New York to meet present needs of extension education and assistance.

He also commented on the subject of safe use of agricultural chemicals, noting that developments in this area can be "both fruitful and frustrating" and that the agricultural college is following the residue question with vigor.

"Scientific research must remain strong and our attitudes must be flexible," he said. "The world has yet to provide a more effective team for solving agricultural problems than the colleges, industry and government working together."

The conference was sponsored by Cornell University in cooperation with the AFMA.

TOP OF THE HOPPER

(Continued from page 2)

same thing. As a matter of fact, there may be altogether different effects at different levels. He noted that vitamin D at high levels causes calcification while at low levels it is vitally necessary. Now, if vitamin D at high levels caused cancer in test animals rather than calcification, it would be ruled out, would be illegal as an additive in feed, even at the low levels which are necessary. The law as it now stands would not permit its use at any level. This is just one example of why the professional pharmacologist resents the Delaney clause; it removes the right to use judgment in evaluating hazards.

NUTRENA

(Continued from page 7)

a system for producing eggs more efficiently and at lower cost than competitive producers and (3) makes it possible for the producer to anticipate a premium price when the M&H 'certified fresh fancy' egg brand is established."

Further explaining these producer advantages, Nutrena noted that the initial program would not guarantee the producer a flat price or a premium for his eggs, but would assure him a market where his eggs would command the best price in the area.

"When the quality-controlled eggs are introduced under the M&H brand name, they will have to be competitively priced with other brands in order to establish the new M&H brand," Nutrena spokesmen related. "But, it is anticipated that when the new brand is established and recognized by the consumer as the name of a premium product, the M&H eggs probably will demand a premium price and this premium will mean a higher price to the producer."

Provides Plans

In addition to manufacturing the layer feed expected to be fed to flocks of participating producers, Nutrena is providing plans for housing, equipment and management.

E. C. Fuller, Nutrena executive vice president, said a complete "high density layer system," to be constructed and operated by M&H Farms, was developed by poultry scientists at Nutrena's 840-acre research farm at Elk River, Minn.

The system's 10,000-bird houses are windowless and of pole-type construction, and include insulation and ventilation features. Nine of these houses will be hooked together in three 3-unit groups at M&H Farms. Automatic handling of feed, water, eggs and manure will enable one man to handle a three-house unit of 30,000 birds, Mr. Fuller said.

Capital for establishment of the new egg project was obtained from about 40 owners of Big Star food stores and from officials of Malone & Hyde, according to Joseph Hyde, Jr., Malone & Hyde president. He said owners of other associated stores would be invited to participate as the supply of eggs expands.

"The stores have invested their money so that M&H Farms can provide the necessary nucleus of steady, dependable supply," Mr. Hyde said.

FOXBILT

(Continued from page 6)

will permit direct batching from the tanks to the mixing tower as well as handling of incoming ingredients and loading out of bulk feed; Toledo Scale equipment that automatically prints weights of ingredients and outbound feed shipments, and a 50-ton truck scale.

Foxbilt, which maintains a sizeable hog breeding herd, is in the process of changing from a leasing program for gilts to sale of the animals. The gilts are sold for cash or on a conditional sale whereby the customer may delay payment until first litters are marketed. The lease program on boars is being continued.

The company, Mr. Rodgers said, has not leased gilts for over a year and instead has been concentrating on conditional sales. Administration and field supervision of the extensive leasing program became too time-consuming and costly, Mr. Rodgers said, and the present program is much more satisfactory.

SOUTHEAST

(Continued from page 6)

can be used as spot checks on equipment, mixing efficiency and guaranteed values. However, it was noted that nutritional value may not always be revealed by routine chemical tests.

Dr. Fuller also recommended such things as: (1) Use of proven sources of ingredients. (2) Use of production data from users of feed, which is especially good in integrated operation with shorter "pipeline." (3) Use of AFMA buying guides. (4) Consultation with industry associations for standards, specialists in colleges and state departments of agriculture.

CONTROL OF MOISTURE IN STORED GRAIN—The advantages of using aeration to cool stored grain were explained by Lloyd L. Smith, agricultural engineer with USDA at Athens. Mr. Smith said that cooling by aeration (1) prevents heat damage; (2) reduces or minimizes mold and bacteria growth; (3) stops insect reproduction at 60° F. and all insect activity at 50° F. and below; (4) eliminates moisture migration and accumulation by equalizing the storage temperatures. Aeration, he said, also can be used for removing storage odors, holding moist grain in storage for brief periods and holding high moisture grain during heavy harvest receipts until it can be run through a dryer. Also, aeration generally costs less than turning grain.

Mr. Smith defined aeration as the moving of a small amount of air—usually less than ¼ cu. ft. per minute per bushel—through stored grain to improve or maintain its value. Recommended airflow rates for the Southeast are 1/15 to 1/10 cfm/bushel. It is also recommended that aeration be performed in stages in order to take full advantage of the limited amount of cooling weather in the Southeast. Airflow rates as low as 1/40 cfm/bushel have been successfully used to maintain satisfactory grain storage temperatures and to equalize the grain temperatures and moistures during the summer months when no appreciable cooling could be accomplished.

Tests have proven, said Mr. Smith, that stored grain can be cooled with aeration from harvest temperatures of 90° F. and above, down to 50° F. and below. Once grain is cooled in storage, it will remain cool for the remainder of the season's storage period.

The direction of air movement is dependent upon type of storage in which aeration is used. A downward air movement is recommended for upright storage to eliminate the possibility of moisture condensation in the surface layers of the grain and on the bin walls and roof above the grain. An upward movement is recommended for flat storages to give a better airflow distribution through the grain mass.

For storage, Mr. Smith noted, moisture should be 12% or less. This would usually require predrying. Then, with aeration, one can maintain grain quality until the next season. There is some drying during the storage period, he mentioned. Evaporative cooling takes place, so some moisture goes out.

In answer to questions from feed men present, Mr. Smith also mentioned these things:

An aeration system can be set so that it will not run unless the air is a certain temperature or humidity. These settings can be changed as the season progresses. It is necessary to satisfy both conditions—temperature and relative humidity that is low enough.

If grain is heating and one wants to use aeration, one can do so even if there is 100% relative humidity, provided the air temperature is at least 15° cooler than the grain.

Aeration should be done at night as much as possible because the air is cooler then.

LIQUID HANDLING AND MIXING—Detailed information and suggestions on all aspects of liquid storage, handling and mixing were presented by Oak B. Smith of the Wenger Mixer Mfg. Co., Kansas City. After outlining systems for handling and storage, he described various types of systems for mixing and, in so doing, he touched upon the possible problem of contamination, which is mentioned more frequently these days among production men.

Mr. Smith first listed economic,

Chicks Placed in Principal Broiler Areas

(000's omitted)

Week ending	Maine	Conn.	Penn.	Ind.	Ill.	Mo.	Del.	Md.
August 27	1,091	441	688	645	97	625	1,738	1,858
September 3	1,073	353	798	588	92	627	1,741	1,825
September 10	1,066	400	667	654	104	719	1,573	1,998
September 17	676	364	600	588	118	603	1,572	1,973
September 24	1,008	473	695	610	120	650	1,442	1,894
October 1	1,068	433	629	581	102	615	1,552	1,903
October 8	1,037	358	778	589	68	643	1,429	1,838
October 15	908	508	698	520	40	518	1,596	1,752
October 22	993	362	595	643	78	602	1,312	1,980
October 29	1,016	399	678	418	78	568	1,447	1,797

Week ending	Va.	W. Va.	N.C.	S.C.	Ga.	Fla.	Ala.	Miss.
August 27	931	407	2,850	331	5,969	203	3,176	2,032
September 3	817	413	2,838	302	5,972	246	3,232	1,994
September 10	784	420	2,693	300	5,960	206	3,000	2,022
September 17	790	363	2,717	297	6,139	185	3,115	2,069
September 24	778	313	2,645	297	5,961	200	3,107	1,944
October 1	678	423	2,844	303	5,946	202	3,085	1,880
October 8	809	326	2,873	326	5,694	202	3,084	1,884
October 15	713	356	2,809	317	5,750	198	3,099	2,027
October 22	684	385	2,746	302	5,624	228	3,053	2,057
October 29	714	353	2,820	308	5,627	205	3,156	2,094

Week ending	Ark.	La.	Texas	Wash.	Oregon	Calif.	Total 22 areas 1960	Total 22 areas 1959
August 27	3,321	351	1,760	333	180	964	29,991	29,236
September 3	3,104	356	1,703	298	197	961	29,529	27,913
September 10	3,035	356	1,611	233	219	1,020	29,037	26,268
September 17	3,073	334	1,583	278	192	920	28,489	24,682
September 24	2,906	325	1,658	242	218	1,006	28,491	24,573
October 1	2,893	356	1,623	216	195	1,109	28,536	24,612
October 8	2,865	346	1,615	256	208	1,033	28,261	24,674
October 15	2,884	319	1,635	218	214	1,024	28,103	23,755
October 22	3,022	337	1,608	263	137	892	27,903	24,066
October 29	2,998	341	1,660	182	158	1,051	28,068	25,712

mixing and other advantages of using liquid ingredients. At the same time, he emphasized the importance of uniformity, and he suggested using one source so far as possible and having the supplier standardized on characteristics. Quality and other aspects of liquid handling also were brought out in storage recommendations.

For best mixing results and less contamination problem, Mr. Smith recommended use of continuous high speed mixers for the blending of liquids into formula feeds whenever possible.

In the case of liquid application to pellet mashes, he recommended high speed mixers built into pellet mills themselves. He noted that binning of feeds into which liquids have been blended may result in bridging in the bin, contamination problems in the bin and conveying systems and cleaning systems above the pellet mill. Also, he said that there should be an easy way to check-weigh the throughput of the mill. The liquids should be applied at uniform rates, without pulsations, and at optimum mixing temperatures.

Mr. Smith continued: "A ring-type pellet mill, when equipped with a high speed mixer of proper design, and with a liquid conditioning feeder, can produce good hard pellets containing low levels of molasses (1-15%), and somewhat softer but manageable pellets containing medium levels of molasses (15-30%), although these medium molasses pellets will require dusting in most cases and will require close attention to ingredient and die selection. For high molasses pellets (30-50%), a high molasses pellet extruder will be required.

"If your mill arrangement does not permit liquids application in the pellet mill mixer-conditioner, the next best step is to use a high speed mixer equipped with liquid conditioning feeder or feeders. If possible, this mixer would be at a high point in the mill as this will minimize contamination problems incident to handling meal feeds after liquid application."

He said if pellet mill or plant design does not permit application of liquids in the pellet mill or in a continuous high speed mixer between the batch mixer and pellet mill, the "only alternative is to apply the liquids inside the batch mixer. While this is possible from the standpoint of liquid proportioning, we recommend it only as a last resort."

Mr. Smith said one reason for recommending against liquid application in a batch mixer is the contamination problem. He said that cakes of liquid will build up on the flights of the mixer and sometimes on the mixer shell. If these cakes contain medicaments, they may contaminate subsequent batches. He also mentioned longer mixing cycles and greater horsepower requirements. A high speed dresser and blender may be installed after the batch mixer to blend out balls, he continued, "but this will not result in such a uniform blend as might have been obtained if the liquids had been applied in the high speed mixer itself. Also, a surge bin under the mixer becomes necessary if the high speed blender is to be used." Total costs, Mr. Smith contended, will become higher than if the liquid mixing had been done in the pellet mill or a separate packaged model mixer.

Where liquids are to be applied to mash feeds to be delivered in bulk, he said that the best method is to deliver these feeds dry to the bulk bins and then apply liquids to them in high speed mixers just as the mash is being loaded into the bulk truck.

COMPLIANCE WITH FDA REGULATIONS — Plant inspection and other aspects of Food and Drug Administration regulations were covered in a talk by J. J. Milunas, chief FDA inspector at Atlanta. Mr. Milunas reviewed some of the various provisions of the federal law, including new drug, food additive and antibiotic provisions. In addition, he outlined some of the things which inspectors will check.

When an inspector visits a mill, he will present a notice of inspection. At that time, the manager should accept the inspection and work along with the inspector. He is there to help, Mr. Milunas said.

The inspector will check batch formulas, and the mill operator must have required new drug or antibiotic forms for feeds which he makes. The mill cannot make special mixes without these. The inspector probably has a record of what the mill is supposed to be doing—such as what is going into the feed, sampling and analysis provisions, etc.

The inspector will check supplies of premixes, and the mill should have records showing drugs received, how used, lot numbers, etc. He also will see whether precautions are taken to clean out equipment when going from one medicament to another in order to avoid contamination. He will observe the dust collector and determine what is being done with materials from the collector. He will check labeling and see whether feeds have been changed since the labeling was improved. Other points in mill operations also will be checked.

Mr. Milunas advised that now is the time for a mill to be sure that it is complying with food additive amendment requirements. Unless there are flagrant violations, citations probably will not be made before next March.

He said that inspectors will check ingredients in the mill, and it is the operator's responsibility to know what is in the ingredients. Saving of some labels was advised. Comparisons will be made between ingredient and feed labels. After it is determined what is being used, the inspector will determine how much is being used and whether it is permissible.

If a feed man is doubtful about any points in the enforcement program, he is advised to contact his nearest FDA office, which will answer or obtain answers to his questions.

"Come March 6," said the inspector, " a serious program will be under way to eliminate violations."

BIN FLOW—A new Butler Mfg. Co. film on bin flow (Feedstuffs, Oct. 1) was shown to the feed men by Art Stegner of the Butler company, Kansas City. In showing the film, he offered certain suggestions.

The film showed how various types of single materials flow from different types of bins, highlighting problems which may be encountered under various circumstances.

At the outset, Mr. Stegner pointed out that the film is not a demonstration of unmixing but shows flow problems. He said that while the film does not show unmixing or mixing, it is hoped that work on this can be done later.

The ingredients used in the color movie demonstration represent the texture of some feed mashes that are used.

Some of the points brought out in the film were these: For some finely ground materials, a bin with center discharge and no discharge auger does not work well. A side discharge is better on various materials, but on some products, difficulties still are experienced.

An internal auger smooths flow of materials. It sets up a vibration which helps material flow out. It supplies agitation to assure a steady flow. There may be bridging even when an auger is used, but as material tends to bridge, the auger vibration will act to break material loose.

On some products, the material may break away in large masses, and it may be better to use a number of smaller bins rather than one large one.

In some cases a center discharge with agitation is better than a side discharge.

Mr. Stegner also pointed out in the presentation that no definite conclusions may be drawn from this study on the question of round vs. square bins.

The film went on to show that some materials may remain in a bin from a previous filling. Unless clean-out steps are taken, new material will enter and the old material along the sides will not be affected. If enough vibration were applied, one could get complete cleanout.

This problem of material remaining in bins, it was indicated, suggests the need for visual cleanout in these days when possible contamination problems are greater.

DATA

(Continued from page 7)

or a nitrogen need for the synthesis of the non-essential amino acids.

IRON ADMINISTRATION — Dr. W. G. Pond of Cornell University presented information from the literature and from Cornell work on the effects of oral or parenteral iron administration to suckling pigs and to sows.

He said evidence has established the effectiveness of iron-dextran injected intramuscularly in maintaining normal growth and hemoglobin levels of suckling pigs. The optimal level appears to be greater than 100 mg. but probably no greater than 200 mg. of iron given in either one or two injections during the first week to 10 days of life.

"The injection of other iron compounds, including peptionized iron, ferric ammonium citrate and ferric phosphate have given generally unsatisfactory results in terms of growth and hemoglobin response," Dr. Pond said in summarizing his paper. "Toxicity was observed when ferric ammonium citrate or ferric phosphate was injected.

"Spraying or swabbing the sow's udder daily with a saturated ferrous sulfate solution or allowing the pigs access to fresh sod provided sufficient iron for normal growth and hemoglobin formation. Tablets or pastes containing ferrous sulfate administered to the pigs orally one or more times during the suckling period were generally inferior to iron-dextran in promoting growth and hemoglobin synthesis.

"The intramuscular injection of iron-dextran into the sow at 100 days gestation failed to prevent anemia of the pigs. Ferrous iron given orally to anemic pigs tended to promote growth and a rise in hemoglobin superior to ferric iron. Preliminary data on iron content of the milk from sows injected with iron-dextran during lactation indicate considerable sow to sow variation in response to injected iron."

SOUTHEASTERN SCHOOL—Speakers and others on hand for the Southeastern Feed Production School in Athens, Ga., are shown here as they gathered for visits between sessions. In the first photo, left to right, are three of the speakers—Dr. V. John Brensike, USDA economist, Washington; Oak Smith, Wenger Mixer Mfg. Co., Kansas City, and Jim Butler, USDA ag engineer, Tifton, Ga. In the second picture are Lloyd Smith, USDA engineer at Athens, one of the speakers; A. Talley Moore, Farmers Co-op Exchange, Columbia, S.C., and A. I. Zarow, Kentucky By-Products Corp., Louisville. Program participants shown in the third picture are Larry Alley, Pay Way Feed Mills, Kansas City; Eric Carlson, Ralston Purina Co., St. Louis, and Dr. Henry Fuller, University of Georgia.

MARKETS

(Continued from page 2)

and dairy feeds are moving at a satisfactory level while cattle feed deliveries are on the upturn.

Ohio Valley

Although there was a steady movement of formula feeds this week in the Ohio Valley, tonnages were somewhat below the volume that had been anticipated. It was said that, with plentiful stocks of a variety of harvested feeds available, many farmers were not in the market for mixed feeds because they considered current prices too high.

Commented one manufacturer, "With ample supplies of a variety of home grown feeds in their cribs, silos and barns, farmers are presently not in the mood to purchase more than a minimum of prepared feeds."

With receipts at area stockyards and wholesale poultry markets continuing at a steady pace, prices remained virtually unchanged. Some increase in retail purchase of dressed turkeys was reported as housewives with freezers began stocking up for the holidays ahead. With fewer home grown turkeys available this year; tom and hen price increases are indicated.

Mountain States

Rocky Mountain states dealers report the feed business volume somewhat ahead of this time last year, although prices are somewhat lower. The volume is mostly due to increased poultry production. Cattle are slow coming into the feedyards due to better range conditions, ideal warm weather and lower cattle prices. The weather has been dry and warm in this area.

Pacific Northwest

Representative mixers throughout Oregon, Washington and Idaho generally reported this week that formula feed sales were fully maintained, with a dependable movement of dairy and beef cattle rations. Poultry mashes were in fairly good demand despite recent heavy seasonal slaughter of turkeys throughout the region.

Trading in principal ingredients was rather slow and prices followed an irregular trend. Trade sources indicated that the demand appeared to be lagging considerably behind that of the previous period, with only scattered cars of the main feedstuffs moving out for immediate and prompt needs.

Soybean meal listings closed $1-2 ton lower, while meat and bone meal values finished as much as $1 ton higher. There was an active demand for meat meal, with some export sales reported.

Blackstrap molasses quotations grained $1 ton while whole corn price showed further weakness, but other feed grains managed to close unchanged to slightly higher.

G.L.F.

(Continued from page 6)

G.L.F. is working with manufacturers to help develop improved machinery for harvesting forage crops, he said.

Poultry farmers in G.L.F. area are rightly worried about declining per capita consumption of eggs and competition from western and southern eggs being trucked to eastern markets, Mr. Fallon noted.

He quoted figures showing that poultrymen here can produce eggs as economically as in any other area.

"To compete," he declared, "our poultrymen will need new and better equipment, and must follow improved methods."

In a model poultry house built by G.L.F., labor is about half that required in a conventional system, he said. The house uses automatic equipment and birds are housed in colony cages, 20 per cage.

Two new G.L.F. departments were created during the past year to deal with specialized functions, he told members. The farm building department plans, builds and equips modern farm buildings. The home and garden department runs stores primarily in the home and garden business, at Nassau, L.I.; Morristown, N. J., and Syracuse.

In the G.L.F. store system, G.L.F. is "tending toward hub points—fairly large agencies big enough to supply every service that the farmers need," Mr. Fallon commented. These stores must cover a large trading area. "This means some of the smaller points will drop out. This has been happening gradually and it will continue."

Other efficiencies are made in shipping directly from mills to farm, especially feed and fertilizer, and moving hardware items directly from manufacturers to stores, without going through a G.L.F. warehouse, Mr. Fallon commented.

Cooperative G.L.F. Exchange ended its last fiscal year with higher profits on a smaller volume of business compared to the year before, J. C. Corwith, G.L.F. president, told mmebers. Earnings for the fiscal year ended June 30 were $5,290,139 compared with $4,589,430 the year before. The 1959-60 figure is second high for the past six years, he said.

Wholesale dollar volume — representing commodities sold by wholesale divisions to retail G.L.F stores —totaled $170,808,000, a drop of 3.7% from $177,356,000 for the previous year. This also is second high for the past six years.

Total volume for the G.L.F. system, including the wholesale figure $115.9 million in service stores, $29.5 million in petroleum bulk plants, and an estimated $66.7 million by franchised dealers, was $382,874,000, or $1¼ million every working day, Mr. Corwith pointed out.

Earnings were used to pay $2,458,000 federal income tax and $1,408,200 stock dividends and $1,423,500 was retained as net margins.

The cooperative's total assets amount to $68,918,686. Members' equity equals 70% of this amount, the highest percentage in the past six years.

Trends Outlined

Trends in G.L.F. operations were outlined by Charles H. Riley, director of wholesale, and Glenn E. Edick, director of distribution.

Mr. Riley reviewed improvements, new products and research in mills, seed and soil building divisions. Changing times are indicated in the growth of feed and fertilizer shipped in bulk; a nearly 100% increase in manufacture of pelleted dairy feeds; steadily increasing tonnage of granular and free-flow fertilizers; new equipment for making granular pesticides; and the new varieties of alfalfa, corn and small grain being developed, he reported.

Mr. Edick reported a total retail volume through stores and other retail outlets of just over $120 million. The G.L.F. petroleum division scored its best year, he noted, with an increase of 6 million units over 1958-59.

Some of the improvements mentioned by Mr. Riley, resulting in savings to farmers, included:

Molasses shipped through the St. Lawrence Seaway—saving $3 per ton, or 30¢ per ton of mixed feed.

New facilities for loading bulk feed trucks at mills in Buffalo and Albany. Bulk feed shipped mill-to-farm saves the farmer $4-6 per ton.

New pellet machines at the Albany mill, to meet increased demand by farmers for this form of feed. Pelleted dairy feeds, for instance, were up 98% this July and August, compared to last year. Pellets cost the farmer no more than regular feed.

Total assets in the G.L.F. retail system are just under $46 million. Mr. Edick said, a $1 million increase over the year before.

Farmers' investment in retail units increased $1.6 million to $26 million, including $15,297,000 retained margins and $10,864,000 store stock.

In the face of rising operating expenses, retail stores have budgeted a $1¼ million reduction in expenses for the current fiscal year, he said. For the year completed last June 30, earnings were 1.9% of volume, contrasted with 2.5% the year before.

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